Chapter 5:97
Appendix F

with amendments through October 20, 2008

NEW JERSEY COUNCIL ON AFFORDABLE HOUSING

Established 1985

Third Round
Consultants' Reports

5:97-APPENDIX F

COUNCIL ON AFFORDABLE HOUSING (COAH)

Consultant Reports

CONTENTS

Analysis of Vacant Land in New Jersey

And Its Capacity to Support Future Growth

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For
The Council on Affordable Housing
Department of Community Affairs
State of New Jersey

Final Report
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1.0 Introduction

The National Center for Neighborhood & Brownfields Redevelopment (the Center) was requested by the New Jersey Council on Affordable Housing (COAH) to:

- Prepare a comprehensive analysis of vacant available land in the State of New Jersey;
- Estimate the capacity of that land to support future residential and non-residential development; and
- Estimate the amount of redevelopment that would occur statewide in the future.

These tasks are part of a larger project encompassing the analysis and revision of COAH's proposed Third Round Affordable Housing Rules, which is being led by the Penn Institute for Urban Research and Wharton GIS Lab at the University of Pennsylvania (U. Penn Team). The results produced by the Center will be used for three primary purposes:

- To determine if there is sufficient vacant land and remaining development capacity to support the State's projections of growth in households and employment out to at least the year 2018;
- To determine if there is sufficient vacant land and remaining development capacity in growth areas of the State as a whole and in each of the COAH Regions, to support the use of a growth-share methodology and growth-share ratios for distributing affordable housing needs; and,
- To provide an estimated upper ceiling or limit on the amount of household and employment growth that each of the 566 municipalities in the State will be able to absorb before it becomes fully developed.

1.1 Revisions and Expansion of Project Scope

A Draft Report was submitted to COAH by the Center on October 5, 2007, and was reviewed and made public by the COAH Board on October 10th. Written comments and questions were subsequently received by COAH from several interested stakeholder groups, and the Center participated in discussions of the report and related issues with representatives of COAH and these interested stakeholders. In response, COAH requested the Center to revise and expand its vacant land and development capacity analysis to include the Flood Hazard Area Control Act Rules which were adopted by the Department of Environmental Protection subsequent to the issuance of the Draft Report, on November 5th. These Rules restrict development of lands located in flood hazard and riparian zones of regulated waters, as described in N.J.A.C. 7:13-3 and 4. The Center was also asked to comment on the potential long-term impacts of: 1) the DEP's proposed amendments to the State's Water Quality Management Planning Act Rules, as published in the New Jersey Register on May 21, 2007; and 2) the Highlands Regional Master Plan – Draft Final and supporting technical information issued on November 30, 2007.

The Center's revised Final Report, dated December 31, 2007 was published in the New Jersey Register on January 22, 2008 as one of the several consultant reports supporting

COAH's proposed 3rd Round Affordable Housing Rules. COAH subsequently conducted five public hearings and received hundreds of written comments from interested stakeholders with regard to its proposed Rules and supporting consultant reports. In addition, meetings were held by COAH and the Center with:

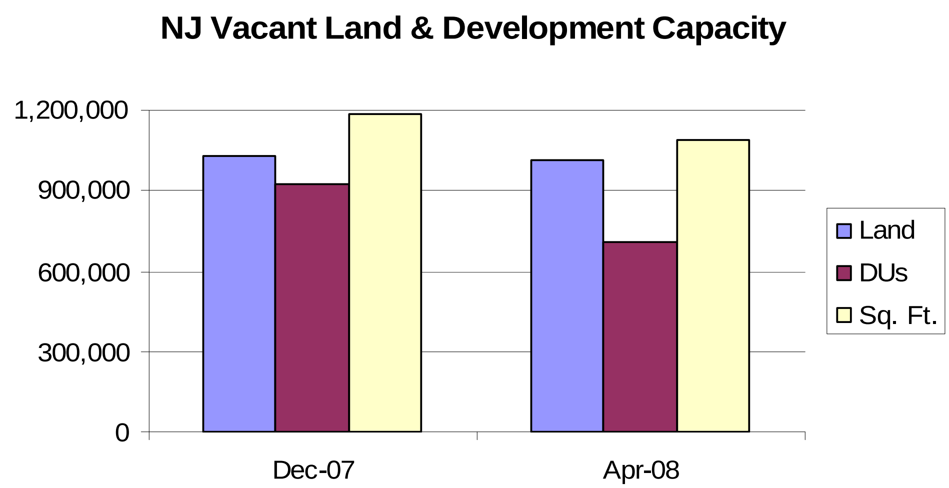
- NJ Highlands officials to discuss the status and clarify the potential impacts of the Highlands Regional Master Plan (RMP);
- DEP staff to discuss the availability of additional spatial data related to the recently adopted Flood Hazard Area Control Act and pending expansion of C-1 stream classifications, and to clarify how development and redevelopment may be impacted by the floodplain and buffer constraints included in the Act; and,
- DEP staff to seek further clarification on how the pending Water Quality Management Act Rule would affect vacant lands and development within current sewer service areas.

After consultation with COAH and the U Penn lead consulting team, it was decided that the vacant land and development capacity analysis contained in the Center's December 31st Report was to be revised as follows:

- Use new DEP spatial data to expand the definition of C-1 streams to include all headwaters and thus increase the riparian buffers to 300 feet on both sides of such streams, and to identify streams flowing through areas that contain acid producing soils and thus require minimum 150 foot buffers;
- Remove environmentally sensitive lands from current sewer service areas and recompute the development capacity of lands supported by septic systems pursuant to the pending Water Quality Management Act Rule (WQMR);
- Use recently released Highlands spatial and other data to recompute the development capacity of lands in the Highlands Planning Area based on local zoning land use and densities. These buildout results will approximate the baseline or probable maximum capacity of lands within the Planning Area pursuant to the pending Highlands Regional Master Plan; and,
- Remove environmentally sensitive lands from current sewer service areas and recompute the development capacity of lands supported by septic systems within the Highlands Planning Area, pursuant to the DEP's pending WQMR and as being applied to other areas of the State. Municipalities in the Planning Area will be required to either implement the DEP's pending Rules or voluntarily conform to the Highlands RMP, both of which will result in the imposition of additional land use constraints and thus lower development capacity below the baseline discussed above.

These changes are intended to reflect a conservative estimate of the impacts of adopted and soon to be adopted environmental constraints on the development of vacant lands across the State. As described more fully later in this report, the actual impacts will not be determined until municipalities fully implement the pending WQMR through development of county-wide wastewater management plans, the 83 Highlands municipalities with lands in the Planning Area choose to voluntarily conform to the RMP or not, and individual development and redevelopment projects that may infringe on floodplain, wetlands or riparian buffers are reviewed and approved or not.

Factoring in these revisions, the Center estimates that there are 1,012,692 acres of unconstrained and undeveloped vacant land in the State, and that this land has a residential development capacity of 711,670 dwelling units and non-residential capacity space of 1,090.6 million square feet.



2.0 Regional Planning Areas

The State of New Jersey is divided into different planning, environmental and regional governing areas that are regulated or guided by rules established by the Office of Smart Growth (OSG) and State Planning Commission, Department of Environmental Protection (DEP), Meadowlands Commission, Highlands Council and Pinelands Commission. Some are statewide while others are regional in nature, and they often overlap one another, sometimes dissecting municipalities into multiple parts with different rules for determining what lands are vacant and available for future development, the types of development permitted and the densities at which development should occur. In an effort to take all of these variables into proper consideration, the Center utilized the following resources in developing its analysis of vacant land and the capacity of that land to support future growth:

- Meadowlands, Highlands and Pinelands – These three regional planning organizations govern the use of about 1.4 million acres of land (the Highlands Council shares authority over the Preservation Area with the DEP), and use different definitions and methods for determining vacant land, buildable area, land uses and development densities. The Center worked closely with each organization to calculate vacant land and development capacity in a manner that was consistent with their land use rules and regulations.

- Draft State Plan and State Plan Policy Map – The State Development and Redevelopment Plan divides the State into planning areas that share common conditions with regard to development and environmental features, and identifies:
    - o Areas for Growth – Metropolitan (PA-1), Suburban (PA-2) and Designated Centers
    - o Areas for Limited Growth: Fringe (PA-3), Rural (PA-4), and Environmentally Sensitive (PA-5).
    - o Areas for Conservation: Fringe (PA-3), Rural (PA-4), and Environmentally Sensitive (PA-5)

  The Center used residential densities consistent with the objectives of the State Plan and market trends to calculate the capacity of vacant lands outside of the Meadowlands, Highlands Region and the Pinelands to support future growth.

- Sewer Service Area – DEP spatial data was used to identify vacant lands within existing sewer service areas, and those that were not. The Center used residential densities consistent with the objectives of the State Plan and market trends to calculate the capacity of vacant lands located within a sewer service area (SSA), and used septic densities provided by the DEP at the watershed level to calculate the capacity of lands located outside of an SSA.

3.0 Vacant Land Analysis

Vacant land is defined as those lands which are undeveloped and not environmentally or otherwise constrained from future development, based on current State or regional agency regulations and policies. The Center divided the State into five geographic and regional units in order to recognize differences in regulatory and policy land use constraints imposed by the three regional planning agencies versus other areas of the State, as well as the availability and use of data sources of differing quality and detail:

- Meadowlands
- Pinelands
- Highlands Planning Area
- Highlands Preservation Area
- Rest of State

The most current version (Version 3 – June 2007) of the Draft State Plan Policy Map was provided by OSG and used to delineate State Planning Areas and the boundaries of the Meadowlands and Pinelands. The Highlands boundaries were downloaded from its web site. The three regional areas were extracted from the LU/LC base map and addressed separately as described in this report. A number of municipalities partly located in the Meadowlands and Pinelands were split into two parts, and vacant land was computed separately for each section based on rules appropriate to that area.

A number of other spatial layers were overlaid on the resulting data so that each vacant land spatial polygon created had attributes which allowed the results to be condensed and summarized by:

- Municipality (1980 FIPS Code)
- County
- COAH region
- Type of Community (Urban, Suburban Exurban and Rural based a methodology developed by the Center for Urban Policy Research at Rutgers University)
- State Planning Area
- Designated Center
- Sewer Service Area (NJDPES Permit number if available)

Although the data used in this analysis is the most current and accurate available, and the methodology for estimating vacant land was the most thorough and appropriate, there may be differences at the municipal or community level when compared to local on-the-ground knowledge of individual land parcels. Many individual municipalities and counties have developed GIS databases based on local property tax parcel information, and amended it to include local knowledge of land uses and constraints. However, that data is not available for all municipalities and counties, and most of what has been prepared has not been reviewed for completeness and consistency by NJDEP or the Office of Smart Growth. COAH anticipates that accurate and uniformly prepared parcel based data will be available on a statewide basis in several years, and it hopes to use this more preferred and accurate data in the future once it is uniformly available.

3.1 Rest of State

A number of studies of vacant land at the municipal, county, regional and state level have been conducted in recent years by different organizations using differing methodologies and spatial data sets. The Center felt that it was critical for COAH to use the most current and accurate spatial data available, and that it use a set of assumptions and methodologies that were supported by the State's Office of Smart Growth (OSG) and Department of Environmental Protection (DEP). To this end a meeting was held in May 2007 with representatives from OSG, DEP, COAH, the Center and the U Penn Team, to discuss what data was available and how it should be used to produce the most accurate estimate of vacant land under current State regulation and land use policies.

It was agreed that vacant land outside of the New Jersey Highlands, Pinelands and Meadowlands ("Rest of State") would be calculated by the Center using spatial files made available by OSG, DEP and the NJ Department of Agriculture. The DEP's 2002 LU/LC spatial file would be used as the base file, and the following spatial data would be removed/subtracted from it to obtain vacant lands available for future development (see Exhibit A for LU/LC Dictionary and Exhibit B for list of spatial files):

1. All lands within the legislated boundary lines of the New Jersey Highlands, Pinelands and Meadowlands;
2. Lands already developed (IDs 1 – 5 in Dictionary);

3. Undeveloped-Unavailable Lands (IDs 10 & 11);
4. Undeveloped Wetlands (ID 9);
5. Public open space, parks, etc. (from OSG);
6. Private open space (from OSG);
7. Preserved farmlands (from NJ Department of Agriculture);
8. Buffers around C-1 streams (calculated by Center);
9. Developed areas within LU/LC code 1700 (from DEP); and
10. Upper Wetlands Boundary/Upper Wetlands Limit (from DEP).

The lands that were removed in this process included those that were already developed; waters and wetlands where development is either not permitted or highly restricted under current DEP rules, including 300 foot buffers around all Category One streams and their primary tributaries; parks, and privately and publicly acquired lands for open space or land conservancy purposes; preserved farmlands; and other lands deemed by DEP to be unavailable for development pursuant to current environmental rules and regulations.

3.1.1 Flood Hazard Area Constraints

The Center subsequently expanded the above list of constrained lands to remove flood plains and riparian zones described in the Flood Hazard Area Control Act Rule (N.J.A.C. 7:13) adopted on November 5, 2007. Combined with related amendments to the Coastal Permit Program rules (N.J.A.C. 7:7) and the Coastal Zone Management rules (N.J.A.C. 7:7E), the DEP is applying more stringent standards for development in flood hazard areas and riparian zones adjacent to surface waters throughout the State. “The Department has adopted these new rules in order to better protect the public from the hazards of flooding, preserve the quality of surface waters, and protect the wildlife and vegetation that exist within and depend upon such areas for sustenance and habitat. In order to minimize the impacts of development on flooding, a 0% net-fill requirement (which was previously implemented only in the Highlands Preservation Area and Central Passaic Basin) will now apply to all non-tidal flood hazard areas of the State.”[1]

The flood hazard and floodway areas used by the Center are based on a spatial database compiled by DEP using FEMA Flood Insurance Rate Maps (FIRM) covering the State’s counties and municipalities as of 1996. These maps identify land areas that have a 1% annual chance of flooding in any given year [are subject to flooding at least every 100 years]. The statewide database was developed through the merger of about two thousand individual paper scanned and other spatial files obtained through FEMA, and as such they may not perfectly edge-match or exactly follow the more accurate 2002 LU/LC digital imagery. The Center updated this database by overlaying more recently prepared and publicly available FEMA Flood Insurance Rate Maps for eight counties. Although this revised and updated spatial database may also not include some floodways in the state that have not have been mapped by DEP or FEMA, the Center believes that this it is the most comprehensive and accurate data that is currently available on a statewide scale.

The Flood Hazard Area Control Act Rules limit, but do not prohibit new construction or redevelopment of existing structures in the floodplain. Construction outside the floodway

[1] Division of Land Use Regulation, Flood Hazard Area Program www.state.nj.us/dep/landuse/se.html

(flood fringe area) in non-tidal waters that does not displace flood storage volume (zero net fill), and projects that are not a “major development” as defined at N.J.A.C. 7:8-1.2 and therefore not subject to the requirements of the Stormwater Management rules at N.J.A.C. 7:8 may be permitted. In addition, fill in the floodway is allowed, provided that the fill is compensated by excavation within some distance of the fill. Tidal waters, such as bays and inlets do not have floodways, so the flood hazard area along these waters is considered to be flood fringe lands and new development and/or redevelopment may be permitted without zero net fill constraint.

Permits to construct new residential and non-residential buildings or to redevelop existing structures within flood hazard areas are granted by DEP on a case by case basis, require extensive engineering studies and often take longer than a year to prepare and obtain a permit. Several hundred are granted each year, but it was impossible for the Center to develop spatial land use attributes that would incorporate such possible variances from the Rules into its GIS based statewide land use model; i.e., the Center could not construct a methodology that would identify specific lands that were likely to obtain a variance or determine at what density they could be developed. The Center’s model thus had to assume that no construction would occur within any of these floodplain areas, and as a result it is more constraining on development than what may actually occur in the future.

“The new rules also expand the preservation of near-stream vegetation (previously protected within 25 or 50 feet of streams) by implementing new riparian zones that are 50, 150 or 300 feet in width along each side of surface waters throughout the State. The riparian zone width depends on the environmental resources being protected, with the most protective 300-ft riparian zone applicable to waters designated as Category One and certain upstream tributaries. Certain waters supporting trout, or habitats of threatened or endangered species critically dependant on the watercourse to survive, or watercourses which flow through areas that contain acid-producing soil deposits, receive a 150-ft riparian zone.”[2]

The DEP’s Water Monitoring and Standards program coded-in the current Surface Water Quality Standards (SWQS) data list onto a draft copy of the new 2002 stream network. The 2002 streams were delineated off the 2002 LU/LC imagery and show streams down to less than 10 ft in length. The spatial data layer provided by DEP for this analysis reflects the stream classifications and anti-degradation designations adopted as of October 16, 2006. The data is in draft form, currently under review, and is expected to be released to the public in early 2008. The Center constructed buffers along all such streams consistent with the riparian zone definitions using this DEP stream classification data. Additional spatial data was provided by DEP in March 2008 to expand the C-1 stream classification to include their headwaters and to identify and modify buffers along streams in areas containing acid producing soils.

The Rules also incorporate the 150 foot transition areas along freshwater wetlands of extraordinary resource value, 50 foot areas along wetlands of intermediate resource value, and zero transition area along wetlands classified as ordinary resource value, as

[2] Ibid.

stipulated in the State's Freshwater Wetlands Protection Act (N.J.A.C. 7:7A). The Center was unable to locate or obtain any database that classifies the State's numerous wetlands into these resource value categories. After discussions with DEP, it was decided that a 100 foot buffer would be created by the Center along the boundaries of all unmodified and unaltered freshwater wetlands (LU2002_codes 6210 through 6500 listed under ID #9, Exhibit A) as a surrogate in this analysis.

It is important to reiterate that most DEP regulations, including the recently adopted Flood Hazard Area Control Act, are intended to protect critical environmental resources across the state, but that they may be waived or narrowed on a site by site basis in response to developer and/or municipal government requests for a variance/permit. This process generally requires an extensive engineering analysis and DEP technical review. As such, the Center's spatial analysis may result in a more conservative estimate of development potential than may be permitted in these areas.

3.1.2 Net Vacant Land

It was determined in this revised analysis that there are 681,090 acres of undeveloped and unconstrained vacant land in the State outside of the three regions.

3.2 Meadowlands

The New Jersey Meadowlands Commission has a comprehensive and up-to-date spatial database of the entire District which identifies developed, constrained and vacant land at the individual parcel level. A detailed review of this spatial database by Meadowlands Planning staff indicated that several undeveloped parcels are right-of-ways, roads, water or otherwise not vacant. After these adjustments and consideration of the new Flood Hazard Area rule, it was determined that there are only 224 acres of vacant buildable land remaining in the Meadowlands.

3.3 Pinelands

The New Jersey Pinelands Commission has an extensive spatial database that supports its Comprehensive Management Plan Land Capability Map, including parcel level detail on constrained and federal owned lands. However, it does not specifically identify vacant lands. The Center therefore used the same Rest of State methodology and data sources to create an initial spatial analysis and map for the Pinelands planning staff to review and compare with their own in-house studies.

Three differences between the Center's and Pinelands' results were found. The first was resolved by the Pinelands providing more extensive open space and constrained land information than was contained in the DEP data that had been made available to the Center. This included lands subject to the Coastal Area Facilities Review Act (CAFRA) regulation. The second was resolved by reclassifying a U.S. Air Force site from undeveloped to developed land, and the Pinelands staff providing spatial data for all federal lands in the District. The third was a difference in the treatment of LU/LC Code 1700 (Other Urban or Built-Up Land). Because the DEP had manually reviewed all major parcels in this category and removed any that were believed to be developed, the

Center chose to leave the balance of such lands classified as undeveloped and thus vacant.

The Center subsequently removed lands constrained under the recently adopted Flood Hazard Area Control Act (see Sections 3.1.1 above), which resulted in a revised estimate of 220,268 acres of undeveloped and unconstrained vacant land in the Pinelands.

3.4 New Jersey Highlands Planning Area

The Highlands Water Protection and Planning Act divided the Highlands Region into the Planning Area and the Preservation Area. Although it gave overall planning authority for the Region to the Highlands Council, determination of where and under what conditions future development could occur in the Preservation Area was delegated to the DEP. These restrictions will be included in the Highlands Regional Master Plan which is expected to be adopted about June or July 2008 and subsequently submitted to the State Planning Commission for endorsement later in the year. With concurrence from DEP, the Highlands Council and COAH, the Highlands were divided into the two regional areas for purposes of determining vacant land. A number of towns were split into two parts, and vacant land was computed separately for each section based on rules appropriate to the Planning and Preservation Areas.

The Highlands Council issued a Regional Master Plan – Final Draft and supporting technical information on November 30, 2007. The Plan imposes restrictions on development in buffered areas around all streams, wetlands and other critical resource areas, as well as in areas with slopes of 15 percent or greater, agricultural, and forested lands in the Planning Area. It also strengthens the previously adopted DEP restrictions on land use in the Preservation Area. Within 60 days of its adoption, the Plan must be submitted to the State Planning Commission for endorsement. As provided in an Memorandum of Understanding signed in December 2007 between the Highlands Council (Council), Office of Smart Growth (OSG) and State Planning Commission (SPC), SPC and OSG will provide the Council with copies of all information concerning a petition for Plan Endorsement by a municipality with lands in the Planning Area, and will consult with and consider any recommendations made by the Council before approving, rejecting and approving with conditions any such petition. This MOU will provide the Council with an ability to influence and possibly control future land use development in a municipality even if it has decided not to conform to the Highlands Regional Master Plan. The Center used the Rest of State vacant land methodology and data sources to create an initial spatial analysis of vacant land for the Planning Area. It then subtracted or removed a hydrology layer of stream buffers, using a downloaded copy of the *Highlands Open Waters Protection Area* spatial file from the Highlands web site, a steep slopes layer, using a downloaded copy of the *Slope Greater Than 15 Percent, Undeveloped* spatial file and an updated *Open Space* spatial file on the same web site, to create a final vacant land spatial file. It was determined that the *Highlands Open Waters Protection Area* spatial layer already represents those lands constrained under the recently adopted Flood Hazard Area Control Act.

Total vacant land in the Planning Area was estimated to be 104,479 acres.

3.5 New Jersey Highlands Preservation Area

As noted above, the DEP was tasked with developing stringent water and natural resource protection standards, policies and regulation that would be used to govern future development in the Highlands Preservation Area. The rules are quite complex, but generally provide exemptions for the construction of a single family home on a lot that existed at the time the Act was enacted in 2004. The ability to construct more than one residential unit on a subdivided parcel is however severely restricted and is very closely linked to having sufficient unconstrained vacant land available for construction of the proposed buildings.

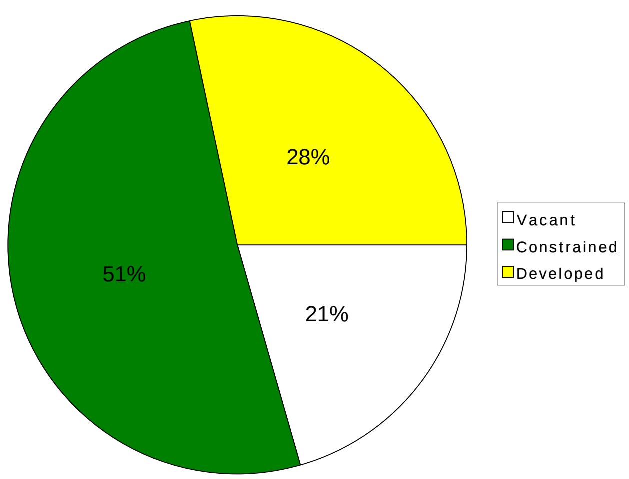
With assistance from DEP and Highlands' staff, the Center developed an unconstrained vacant land spatial file containing a total of 14,707 acres. The initial process followed the Rest of State methodology described earlier. Next, the following spatial data was subtracted/removed to arrive at vacant available land in the Preservation Area:

- Slopes of 10 percent or greater (downloaded from Highlands web site)
- Open Space (downloaded from Highlands web site)
- Buffers on all Highlands Preservation Area waters including wetlands (downloaded from Highlands web site)
- National Heritage Priority sites for rare plant species and ecological communities (downloaded from DEP web site)
- DEP Landscape data (Corrected Version 3) for Ranks 2 through 5 (from DEP)

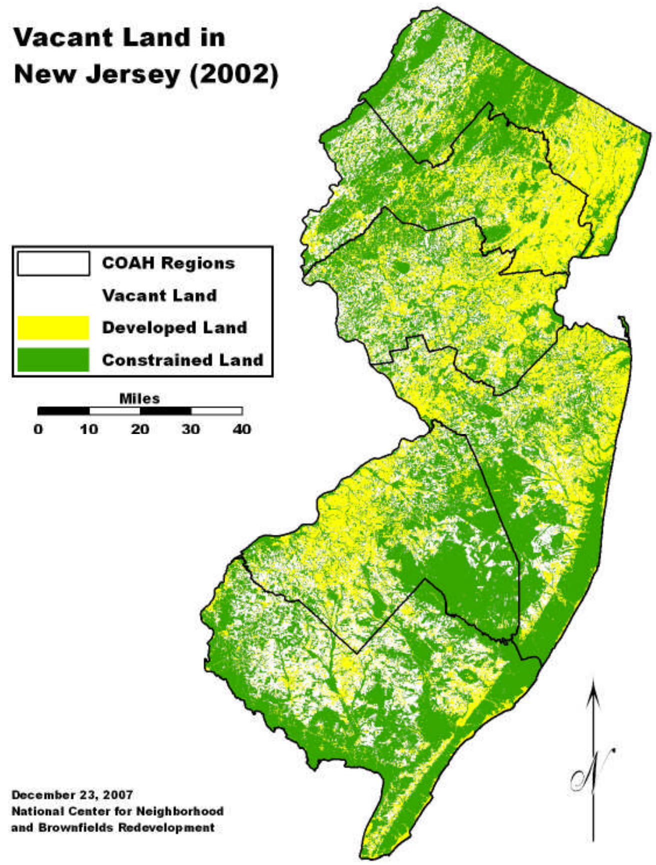
The Landscape data represents habitat for threatened and endangered species, ranks 2-5, consistent with DEP Highlands Preservation rules, and is in Draft form. A Final data set is expected to be made available to the public early in 2008.

3.6 Vacant Land Results

Combining the data and results of these studies show that out of the State's approximate 4.98 million acre total area, about 1.42 million acres (28%) are already developed and 2.55 million acres (51%) are made up of water, wetlands, open space, parks, preserved farms, and other constrained lands. Approximately 1.01 million acres of vacant land are available for future residential and non-residential development.



Developed lands stretch from the northeast part of the state and the large New York metropolitan area, southward through Trenton to the Camden and Philadelphia metropolitan area. Large areas of constrained lands are located in the Highlands and Pinelands.



A large proportion of the vacant land available for future development is thus located in less developed and lower density areas in the central areas of the state (COAH Regions 3 and 4), and even more so in the south (Regions 5 and 6):

- Region 1 – 96,424 acres
- Region 2 – 101,673 acres
- Region 3 – 158,713 acres
- Region 4 – 168,594 acres
- Region 5 – 189,164 acres
- Region 6 – 298,124 acres

4.0 Land Capacity Analysis

Having identified and quantified the amount of vacant land in the State, the next step was to estimate the capacity of that land to support future residential and non-residential development. Capacity is defined as the maximum number of residential dwelling units and non-residential floor space that can be built on the available land, based on assumptions of how the land might be used in terms of type and density. These estimates will be used for three primary purposes:

- To determine if there is sufficient development capacity to support the State's projections of growth in households and employment out to at least the year 2018;
- To determine if there is sufficient vacant land and remaining development capacity in growth areas of the State as a whole and in each of the COAH Regions, to support the use of a growth-share methodology and growth-share ratios for distributing affordable housing needs; and,
- To provide an estimated upper ceiling or limit on the amount of household and employment growth that each of the 566 municipalities in the State will be able to absorb before it becomes fully developed.

One of the objectives of this analysis was to fully consider changes in land use policies and practices that have occurred since Round Two and which are currently being pursued by OSG and/or DEP. These include the goal of reducing future growth in State Planning Areas considered to be environmentally sensitive or better used for agricultural purposes, and seeking greater utilization of available lands in urban and suburban locations that have supporting infrastructure. The establishment of the Highlands Region and special designation of a Preservation Area, and the DEP's recently adopted Flood Hazard Area Control Act and pending Water Quality Management Rules underscore the importance of these efforts.

As before, the Center divided the State into five geographic or regional land use units in order to recognize differences in regulatory and policy land use constraints imposed by the three regional planning agencies versus other areas of the State, as well as the availability and use of data sources of differing quality and detail. Individual buildout models were then created for each, except the Meadowlands which was able to provide a more detailed analysis of its 224 acres based on individual parcel data and local zoning.

4.1 Rest of State

A buildout model was created for the Rest of State that took into consideration variations in the type and size of communities, existing and future land uses, and development densities based on existing conditions, State Planning Area location and access to wastewater treatment systems.

4.1.1 Residential Density Matrix

The 1.01 million acres of vacant land in the state is made up of widely different types and size communities. Existing residential and employment densities vary considerably from municipality to municipality, and region to region, and future growth will be impacted by the location of available lands in different State Planning Areas and access to wastewater treatment systems. To address these variations, the Center constructed a residential density matrix that divided the State into its six COAH Regions and each of these into five land use categories based on State Planning Area, sewer service area and community type.

- Type 1 – Located in Planning Area 1 (Metropolitan) and classified as Urban by the Center for Urban Policy Research (CUPR).
- Type 2 – Located in Planning Area 1 and classified as Suburban by CUPR.
- Type 3 – All other communities located in Planning Area 1.
- Type 4 – Located in Planning Area 2 (Suburban), a Designated Center or within a sewer service area.
- Type 5 – All other communities (those located in Planning Areas 3, 4, 4b and 5 that are not within a sewer service area or listed as a Designated Center).

State Planning Area 1 represents areas of the state that have experienced the most intense development, and includes some of New Jersey's oldest and established population centers. But it also encompasses the largest urban cities like Newark, Elizabeth, Trenton and Camden, as well as many smaller suburban and more rural areas ranging from Englewood, Voorhees and Millburn to Phillipsburg, Bridgeton and Millville. Rather than lumping them all in one basket, the Center divided them into three groups according to their CUPR classifications. The fourth category encompasses lands located in Planning Area 2 and Designated Centers. These areas are less intensely developed, have more dispersed and fragmented patterns of development, and are more likely to have land available for development. The Center expanded this category to also include areas outside PA-1 and PA-2 that are within a sewer service area, and thus have the infrastructure to support additional growth. Together these four categories represent the State's potential growth areas.

The fifth category encompasses all other lands, and thus those areas that are constrained in their development capacity because they are generally dependent on having sufficient land to support on-site septic treatment systems.

Using the DEP's 2002 LU/LC data for residential developed land and 2000 U.S. Census household data at the Census Tract level, the Center calculated an estimated average residential density for each Census Tract. That data was then used to calculate a weighted average current residential density for each municipality. The latest spatial versions of the State Plan Policy Map and DEP sewer service area map were overlaid on the municipal spatial and density data, and each resulting data record was then assigned to one of the first four land use categories based on the above criteria. This data was then used to calculate a median residential density for each of these four categories of land use located within each of the six COAH Regions.

	Land Use Category (DUs per Acre)			
COAH Region	**1**	**2**	**3**	**4**
1	19.19	6.28	1.99	1.35
2	15.53	4.75	2.33	2.27
3	13.84	5.52	1.89	1.69
4	15.31	4.07	1.94	2.32
5	15.28	4.61	2.79	2.30
6	22.73	3.68	2.04	1.87

As expected, the median densities varied by geography (COAH Regions) and community type (categories 1-3 within PA-1). There was less difference between categories 3 and 4. A review of average land use densities in each of these 24 growth areas often showed large variances between the most and least densely developed areas. After conferring with COAH and the U Penn Team, the Center adopted a methodology that assumed that future development on each category of vacant land would occur at the higher of the municipality's current average density or the median density of residentially developed lands in similar municipalities within the same COAH Region. This is consistent with studies which show that densities are stabilizing or declining in areas that are already dense, and increasing in other areas as land values rise.

In addition, a caveat was added that no new development would occur at densities more than 25 percent higher than the municipality's current average density. This minimum requirement is consistent with an analysis of data from the American Housing Survey for the United States (AHS) from 1995 and 2001 that indicates that the median lot size for all residential units (both occupied and vacant) declined by 26 percent over this time period. Although the AHS data is not available at a state level, the U Penn team believes that the results are representative of land use and density trends in New Jersey.

All category 5 vacant lands (those located in Planning Areas 3, 4, 4b and 5 that are not within a sewer service area or listed as a Designated Center) are subject to DEP regulations related to the use of on-site (septic) wastewater treatment systems.

4.1.2 Non-Residential Densities

The amount of employment generated by commercial, industrial, retail and other non-residential properties varies widely across the state because of differences in floor area ratios (FARs) and the type and use of the building constructed. There is no Census Tract or other spatial data set that would provide an accurate estimation of current non-res space or associated densities at the municipal level that might be used to estimate future non-residential land capacity. Nor does the Center have access to municipal zoning and parcel level data.

After conferring with COAH, DEP and the U Penn Team, the Center adopted a methodology to generate a non-residential density for each municipality that is reflective of and a direct function of its residential density. Current and proposed State wastewater management (WWM) and water quality management (WQM) rules provide a mechanism and guidelines for equating residential housing units to non-residential floor area. The proposed WWM rule assumes that an average residential unit generates 500 gallons per day of wastewater effluent. N.J.A.C. 7:9A recommends a default value for non-residential facilities located outside of a sewer service area of 0.125 gallons per day per square foot. Thus, 4,000 sq. ft. of non-residential space on build type 5 vacant land areas produces the same amount of wastewater effluent as an average house. N.J.A.C. 7:14A recommends a default value for non-residential facilities located within a sewer service area of 0.100 gallons per day per square foot. Thus, 5,000 sq. ft. of non-residential space on build types 1-4 vacant land areas produces the same amount of wastewater effluent as an average house. This methodology of linking residential and non-residential densities through the use of wastewater flows is very similar to that used by the Pinelands Commission in its planning studies.

Using these conversion factors, an urban type community having a 20 DU per acre residential density would be given a 100,000 sq. ft. per acre non-residential density, or an FAR of about 2.3. A rural community having a residential density of 1 DU per 4 acres would have a non-residential density of 1,000 sq. ft. per acre.

These conversion factors were multiplied times the municipal residential density determined through the process described in Section 4.1.1 above, to determine the appropriate non-residential density for each vacant land area.

4.1.3 Land Use Mix

In 2002, approximately 67 percent of the developed land in the State was being used for residential housing purposes and 15 percent for commercial, industrial and retail space. However, the proportions used for these purposes varied widely across the state. About 22 percent of municipalities had 80 percent or more devoted to housing. Approximately one-fifth of municipalities had less than 8 percent being used for commercial purposes, while 10 percent had 30 percent of their developed lands used for this purposes. The Center has no information to show that individual municipalities are planning to significantly change these mixes in land use.

In 2002, approximately 14 percent of developed land was identified as being used for athletic fields, transportation/utility right of ways, military, transitional and other purposes. These uses varied widely as well. The assumption used in estimating the maximum buildout potential of the available lands will be that 10 percent will be used for non-residential and non-commercial purposes. This is less than the current average rate, and assumes that Military and several other land uses in this category will decline, remain static or not increase on average above the 10 percent estimate. The remaining 90 percent will be divided according to existing relationships between residential and commercial uses at the individual municipal level.

4.1.4 Minimum Parcel Size

The minimum lot (spatial polygon) size was computed by taking the reciprocal of its DU per acre density (5 DUs per acre requires minimum 0.20 acres of land). For non-residential land a default minimum parcel size of 1,500 sq. ft. (30 ft. X 50 ft.) was used, since the permitted density takes into consideration multiple story buildings. Those land areas not meeting the minimum criteria were coded no build (NB) and the model ignored them in its buildout calculations.

4.1.5 Pending Water Quality Management Act Rule Impact

The pending changes in the Water Quality Management Act (WQM) rules include the reassignment of wastewater management planning responsibility to the County Boards of Chosen Freeholders; withdrawal and re-designation of wastewater service areas where the applicable wastewater management plan (WMP) is not in compliance with the mandatory update schedule contained in the rules; a requirement that municipalities pass an ordinance designed to assure septic system maintenance; and a requirement that updated WMPs address septic density in a manner that demonstrates compliance with a 2 mg/L (ppm) nitrate planning standard.

N.J.A.C. 7:15-5.24(b) establishes criteria for delineating sewer service area boundaries using the presence of four environmental features to determine if centralized sewer service is inappropriate for an area: threatened and endangered species habitats, Natural Heritage Priority Sites, Category One stream buffers, and wetlands. "These four environmental features are unique and sensitive features whose protection is central to the Department's mandate to protect ecological integrity and water quality."[3] DEP identifies environmentally sensitive areas that are not appropriate for sewer service area as any contiguous area of 25 or more acres that contains any combination or all of these four features. The appropriate wastewater management alternative for these areas is individual subsurface sewage disposal systems that discharge less than 2,000 gallons per day, typically thought of as septic systems. "Therefore, though excluded from the extension of sewer service, these areas have a wastewater management alternative that will promote a density of development consistent with the conservation of these resources."[3]

At COAH's request, the DEP provided the Center with its most current Landscape geospatial data layer. The Landscape data represents habitat for threatened and endangered species, ranks 2-5. It is in Draft form, and a Final data set is expected to be made available to the public in early 2008. The Center merged this spatial data with the wetlands, C-1 buffers, and the Natural Heritage Priority spatial layer (downloaded from DEP web site) which depicts critically important areas to conserve New Jersey's biological diversity, with particular emphasis on rare plant species and ecological communities. The Center then overlaid this combined environmental features spatial layer on the revised vacant land spatial data, and merged it with the DEP's current sewer service area (SSA) boundary data. All polygons containing 25 acres or more of vacant environmentally sensitive lands were removed from existing SSAs and reclassified as land use type 5 (development to be supported by septic treatment systems).

This process was applied to all areas of the state and resulted in the reclassification of 95,706 acres of vacant land from being supported by sewers to requiring septic systems. This reduced the residential capacity of these lands from 161,242 dwelling units to 69,328 DUs, a loss in capacity of 57 percent.

The pending Rule also revises the nitrate dilution factor from the current 5.2 mg/L to a level of 2.0 mg/L, which is the ambient nitrate quality in ground water, considering the State as a whole, for all areas except the Highlands Preservation Area. DEP used this limit to estimate the amount of land required for a typical house in different areas of the State. This calculation was based on a regional HUC 11-based application of the Department's GSR-32 groundwater recharge methodology, combined with the Trela-Douglas nitrate-dilution model. However, the Rule relaxes the definition of lands that can be used to provide sufficient onsite dilution to include wetlands, riparian buffers,

[3] N.J.A.C. 7:15-5.24 Delineation of sewer service areas

open space and other optional environmental constraints. No buildings can be constructed on these lands, but they may be used in determining whether there is a sufficient undeveloped area for the required septic drainage field.

The Center estimates that the residential development capacity of the 617,155 acres of land currently located outside of sewer service areas will decline 61,330 dwelling units to a total of 108,055 units, a loss of 36 percent.

4.1.6 Residential Buildout Results

The residential buildout was calculated for each polygon meeting the minimum residential parcel criteria, by multiplying its area in acres times the percent of residential land use associated with that municipality and the density (DUs per acre) assigned to that land use category. Results were rounded down to the nearest whole number before being combined with other results for the same build type in each municipality. A total of 620,214 new residential units could be constructed in areas outside of the three special regions.

4.1.7 Non-Residential Buildout Results

The non-residential buildout was computed for each polygon meeting the minimum non-residential parcel criteria, by multiplying its area in acres times the percent of non-residential land use associated with that municipality and the density (square feet per acre) assigned to that land use category. A total of approximately 890.6 million square feet of space could be constructed in areas outside of the three special regions.

4.2 New Jersey Meadowlands

The Meadowlands has only 224 acres of vacant buildable land split among a number of different type of parcels in the District, due to the large areas made up of wetlands and marshes, landfills, and commercial, industrial and entertainment facilities. Because of the small area involved, the Center asked the Commission's Planning Division to provide the Center with a detailed buildout analysis based on local zoning and knowledge of what development was actually being considered for many of the parcels. That analysis estimates that 308 residential units and 8.0 million square feet of non-residential floor space will be created in a full development of these lands. The Commission also provided an analysis that indicates that the redevelopment of former landfills and underutilized commercial, industrial and entertainment properties have the potential to create as many as 5,775 new residential units and 12.0 million square feet of new floor space.

4.3 New Jersey Pinelands

A buildout model was created for the Pinelands that took into consideration variations in the type and size of communities, existing and future land uses, development densities based on the Pinelands Comprehensive Management Plan and Land Capability Map, and location vis-à-vis sewer service areas.

4.3.1 Residential Densities

The Pinelands Comprehensive Management Plan established nine land use management areas with goals, objectives, development intensities and permitted uses for each. The Center overlaid its Land Capability Map on the vacant land spatial file to identify available lands in five of the largest planning areas. The following recommended residential densities were then used to compute the residential buildout for each area:

- *Preservation Area District* – 288,300 total acres: No residential development is permitted, except for one-1 acre lots in designated infill areas (total 2,072 acres). The Center allocated those 2,072 dwelling units across the municipalities within the Preservation District based on vacant land.
- *Special Agricultural Production Area* – 40,300 total acres: Only residential farm-related housing is permitted at density of 1 DU per 40 acres.
- *Forest Area* – 245,500 total acres: Only residential development is permitted at density of 1 DU per 28 acres.
- *Agricultural Production Area* – 68,500 total acres: Farm related housing is permitted at density of 1 DU per 10 acres and non-farm related at 1 DU per 40 acres. Not knowing what proportion would be of each type in the future, the Center used the 1 DU per 28 acres density of the Forest Area for this area.
- *Rural Development Area* – 112,500 total acres: Limited, low-density residential development is permitted at density of 1 DU per 5 acres.

In the Pinelands Villages, Towns and Regional Growth Area the Center used the 2002 LU/LC mix of residential versus non-residential land use to identify lands available for residential development. The average weighted residential density of each municipality was used to calculate buildout on these remaining lands, since the overall mission of the Pinelands Commission is to limit and not promote growth.

As with Rest of State, 10 percent of the vacant available land was set aside for athletic fields, transportation/utility right of ways, military, transitional and other purposes. Residential development was apportioned to the remaining lands as appropriate to the land use management area and described above.

4.3.2 Non-Residential Densities

The Pinelands Comprehensive Management Plan severely restricts where non-residential development can occur and in some instances what type of non-residential uses are permitted. Limited in-fill non-residential development is permitted in the Preservation Area District, none is permitted in the Special Agricultural Production and Forest Areas, and agricultural commercial and roadside retail are generally permitted in the Agricultural Production and Rural Development Areas.

The Center did not have access to parcel level data with which to determine what infill lots exist in the Preservation Area District that would permit non-residential development, so only residential development was considered in the buildout. In the two planning areas where some non-residential development was permitted, the Center assumed that 10 percent of net vacant available lands (after 10 percent allocation to athletic fields, etc. noted above) would be used for this purpose and the remaining 90 percent would be used for residential development.

In the Pinelands Villages, Towns and Regional Growth Area the Center used the 2002 LU/LC mix of residential versus non-residential land use to identify net lands available for non-residential development. The average weighted residential density of each municipality was then multiplied by 4,000 square feet per DU if located outside a sewer service area and by 5,000 square feet if within an SSA, for purposes of calculating non-residential buildout on these remaining lands.

4.3.3 Minimum Parcel Size

The Center used the same minimum lot spatial polygon size criteria in the Pinelands as with Rest of State.

4.3.4 Buildout Results

The residential buildout was calculated for each polygon meeting the minimum residential parcel criteria, by multiplying its area in acres times the percent of residential land use and density (DUs per acre) associated with that land use management area or municipality. Results were rounded down to the nearest whole number before being combined with other results for the same type in each municipality. A total of 42,596 new residential units could be constructed in the Pinelands.

The non-residential buildout was computed for each polygon meeting the minimum non-residential parcel criteria, by multiplying its area in acres times the percent of non-residential land use and density (square feet per acre) associated with that land use management area or municipality. A total of approximately 37.7 million square feet of space could also be constructed in the Pinelands.

4.4 New Jersey Highlands Planning Area

As noted earlier, the Highlands Water Protection and Planning Act divided the Highlands Region into the Planning Area and the Preservation Area. With concurrence from DEP, the Highlands Council and COAH the Center also separated the two regional parts for purposes of determining the buildout capacity of their vacant and available land.

The 104,479 acres of vacant land located in the Highlands Planning Area is made up of widely different types and size communities, and some are located in both the Planning and Preservation Areas. Existing residential and employment densities vary considerably from municipality to municipality, and region to region, and future growth will be impacted by the location of available lands in different State Planning Areas, pending changes in the DEP's Water Quality Management Act Rules, and changes in land use and densities associated with the Highlands Regional Master Plan.

4.4.1 Use of Highlands Spatial Land Use Data

The Highlands Council issued a Regional Master Plan – Final Draft and supporting technical information on November 30, 2007, and has since held a number of public hearings. There was insufficient time to fully evaluate the RMP, and much of the detailed buildout potential information was unavailable prior to the Center's completion of its vacant land and development capacity report to COAH of December 31st. Over the ensuing months the Center, COAH and the Highlands staffs have met to discuss alternative approaches to balancing the environmental protection objectives of the RMP and COAH's responsibility to ensure that affordable housing is made available throughout the State. After consultation with COAH and consideration of the recent release of detailed spatial zoning and land use data for the Highlands Planning Area, it was decided that the Center would base its vacant land development capacity analysis on local zoning ordinances. These buildout results approximate the baseline or probable maximum capacity of lands within the Planning Area pursuant to the pending Highlands Regional Master Plan.

The use of local zoning and spatial data in the Highlands is consistent with the Center's use of a detailed parcel by parcel development analysis prepared for COAH by the Meadowlands and use of the Pinelands Comprehensive Management Plan and Land Capability Map to identify land uses and appropriate densities for estimating the development capacity within various areas of the Pinelands.

In addition, the Center removed environmentally sensitive lands from current sewer service areas and recomputed the development capacity of lands supported by septic systems within the Highlands Planning Area, pursuant to the DEP's pending WQMR and as was applied to other areas of the State. Municipalities in the Planning Area will be required to either implement the DEP's pending Rules or voluntarily conform to the Highlands RMP, both of which will result in the imposition of additional land use constraints and thus development capacity lower than the baseline discussed above.

4.4.2 Development Capacity and Affordable Housing Estimate

To determine the development capacity of the Highlands Planning Area the Center first applied the Planning Area spatial zoning data and supporting density look-up table to the Center's computation of vacant land. The model estimated that a total of 49,312 residential dwelling units and 207.1 million square feet of non-residential space could be constructed. The Center then used the same procedures as were used on the Pinelands and rest of state to identify and reclassify environmentally sensitive lands within existing sewer service areas to septic supported, and to recalculate the development potential of all lands that would be served by septic systems using DEP's proposed septic densities standards by HUC-11.

The final estimate of 37,509 residential dwelling units was considerably lower than the 75,359 dwelling units estimated previously by the Center using more macro-level, non-zoning data. However, the use of this local zoning and spatial land use data produced an estimated non-residential development capacity of 154.2 million square feet, which was considerably higher than the Center's previous estimate 82.2 million square feet of space for the Planning Area. The large differences in opposite directions between the two models appear to be related to: 1) much lower local zoning residential densities than current on-the-ground conditions; 2) much higher non-residential densities than would appear reasonable in areas located outside of existing sewer service areas; and 3) a higher proportion of land zoned for non-residential purposes than residential compared to the current on-the-ground mix. Unless DEP and the Highlands relax their standards for determining the amount of land required to support a septic system, or DEP is willing to issue permits for the construction of numerous small wastewater treatment plants to meet the projected needs of such extensive non-residential development, local zoning will need to be changed to fit the constraints. The available options are residential use or far lower non-residential densities.

Applying COAH's 3rd Round Growth-Share ratios, the full development of vacant land under the Center's previous analysis generates a potential obligation to construct 24,079 affordable housing units, or about 32 percent of the 75,359 housing units that could be built. Applying the ratios to the results produced using local zoning land uses and densities the full development of vacant lands generates a potential obligation to construct 24,386 affordable housing units, which is virtually the same as produced by the Center's previous model. However, because of the much different mix between residential and non-residential land uses, local zoning will produce an affordable housing obligation that is equal to about 65 percent of all housing that could be built.

4.5 New Jersey Highlands Preservation Area

The DEP was tasked with developing stringent water and natural resource protection standards, policies and regulation that would be used to govern future development in the Highlands Preservation Area. The rules are quite complex, but generally provide exemptions for the construction of a single family home on a lot that existed at the time the Act was enacted in 2004. The ability to construct more than one residential unit on a subdivided parcel is however severely restricted and is very closely linked to having sufficient unconstrained vacant land available for construction of the proposed buildings.

The Center created two buildout models for the Preservation Area to capture these differences. One for exempt parcels – those 25 acres or less in size – and a second for those greater than 25 acres in size. The 25 acre dividing point was chosen because it is the minimum parcel size (none of the land is forested) required for new development in the Preservation Area. The models both used parcel level data downloaded from the Highlands web site to identify and calculate the size of these parcels. No new non-residential construction is permitted except as redevelopment or expansion of existing non-residential building.

4.5.1 Exempt Parcels

Although the Preservation Area contains only 6,630 acres of vacant buildable land when all environmental constraints are taken into consideration, the Highlands Act provides exemptions that permit the construction of new single family homes on land that may not be vacant under this definition:

- *Construction of a single family dwelling for own use or family use*: The construction of a single family dwelling, for an individual's own use or the use of an immediate family member, on a lot owned by the individual on the date of enactment of the Act or on a lot for which the individual has on or before May 17, 2004 entered into a binding contract of sale to purchase that lot; and

- *Construction of a single family dwelling on existing lot*: The construction of a single family dwelling on a lot in existence on the date of enactment of the Act, provided that the construction does not result in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more.

A 25 acre parcel size was chosen as the dividing point between the exempt and non-exempt buildout models used in the buildout capacity of the Highlands Preservation Area, because it is the minimum parcel size (none of the land is forested) required for new development. In total there are 86,253 parcels of 25 acres or less in the Preservation Area, but most are already developed. The Center did not have access to MOD4 parcel data, which would have indicated ownership and development status of these parcels. In its place, a spatial approach was developed in consultation with DEP and Highlands staffs for identifying those parcels that were likely already developed, and thus identifying those where a new single family home could be built with one of these exemptions. The 2002 LU/LC spatial data for lands already developed (IDs 1 – 5 in Dictionary) was overlaid on the parcel data. Those which had developed lands equal to 15 percent of the parcel's total area or 1 acre (whichever was larger) were classified as already developed. A total of 9,662 parcels of 25 acres or less was found to be undeveloped and therefore eligible for the above single family home exemptions. This is an estimate, because each proposed home must still meet stringent DEP water quality management requirements in order to be constructed on that parcel.

4.5.2 Non-Exempt Parcels

There are 1,768 parcels greater than 25 acres in size in the Preservation Area that encompass a total of 207,596 acres of land. The rules that govern whether any of these parcels can be sub-divided into multiple eligible lots or at least be eligible for the above described single family home exemptions are very complex, and best addressed on a parcel by parcel basis. In order to simplify the requirements so that a buildout analysis could be prepared, the Center in consultation with DEP and Highlands staffs developed the following criteria for identifying developable parcels:

- *Minimum lot size requirement*: Under regulations established by DEP pursuant to the Highlands Act, the amount of land required to support each new dwelling unit on these larger parcels is a function of its forested and non-forested areas. The minimum housing lot size is calculated by multiplying the percent of total land that is forested by 88 acres and multiplying the balance times 25 acres, and then adding the two together. Thus, a parcel that is 50 percent forested requires a minimum housing lot size of 56.5 acres.
- *Already fully developed*: The Center did not have access to MOD4 parcel data, which would have indicated the development status of these parcels. In its place, the spatial approach for exempt parcels was used to identify those parcels that were already developed. If 4 percent or more of the parcel's total land area was developed then the entire parcel was categorized as fully developed. The actual DEP rule is 3 percent of impervious surface, but the Center used 4 percent to take into consideration the presence of grass and other non-impervious areas. It also

provided a linkage to the rule for exempt parcels that the presence of 1 acre of development on a 25 acre parcel (4 percent) caused the entire parcel to be declared fully developed.

- *Partially developed*: The Center used the same process to identify those parcels that had one acre or more of developed land, but where the total did not reach or exceed 4 percent of the parcel's total area. The minimum housing lot size for each such parcel is first computed, and then the parcel is divided by that minimum. If it cannot be subdivided (parcel less than twice the minimum lot size) it is considered already fully developed since there is already an acre or more of existing development. If it can be subdivided, one lot is designated as already developed, and the remaining new lots constitute the maximum number of new homes that might be built.
- *No existing development*: The same process is used as with partially developed to determine how many lots can be created. The difference is that at least if it cannot be subdivided it is eligible for the single family house exemption.

To determine whether a parcel can be sub-divided into multiple eligible lots requires that each existing and potential lot first meet the minimum acreage requirement described above. A second test is then required to determine if there is sufficient vacant unconstrained land on which to actually build something. That is because the regulations do not permit the construction of a building or other major disturbance on the environmentally constrained lands. As an example: a 1,000 acre non-forested parcel could under the first test be subdivided into 40 – 25 acre lots. However, if the land is fully constrained due to endangered species habitat, etc., there is no vacant land available on the parcel to build a house, garage, etc. Previous studies have indicated that an average home in large lot areas covers a total of about one acre of land, thus each buildable lot must have at least an acre of vacant land on which the house can be built. Thus, the parcel in our example cannot be sub-divided. The Center was possibly more liberal in its interpretation of this requirement than might be feasible in terms of actual land use, since it allowed up to the maximum number of buildable lots to be designated if there was at least an acre of vacant land available for each. Still, the Center determined that only 1,382 new homes could be built on these 1,768 large parcels.

4.6 Land Capacity Results

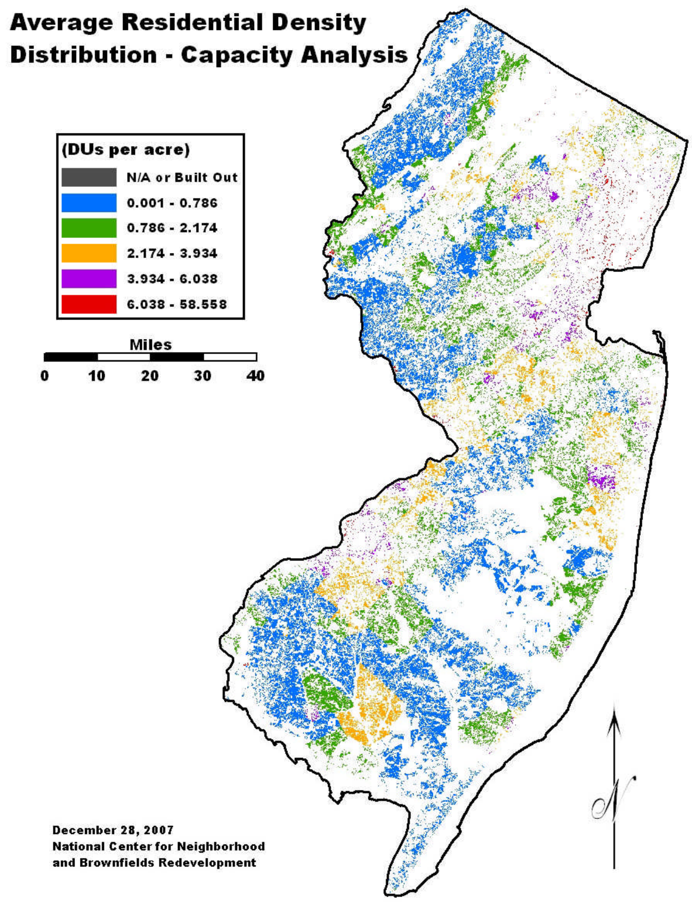
Combining the results of these land capacity studies indicates that approximately 711,670 residential housing units and 1.09 billion square feet of non-residential space can be built on the State's vacant land, based on current and projected buildout densities:

Regional Area	Residential Units	Million Sq. Ft. Space
Meadowlands	308	8.0
Pinelands	42,596	37.8
Highlands - Planning	37,509	154.2
Highlands - Preservation	11,044	0
Rest of State	620,214	890.7

These land capacity results are distributed among the six COAH Regions as follows:

COAH Region	Residential Units	Million Sq. Ft. Space
1	88,505	173.5
2	84,524	222.2
3	114,858	200.1
4	134,789	136.8
5	145,566	193.4
6	143,428	164.6

As indicated on the map, new development will occur at low densities in the more rural areas of the state and at higher densities in those areas already having concentrations of development and thus the infrastructure need to support such growth.



4.7 Potential Development Capacity Constraints

As noted earlier, the DEP has proposed changes to its Water Quality Management Planning (WQMP) Rules (N.J.A.C. 7:15). Numerous changes in definitions, planning agency and other sections of the current rules have the potential to affect where and how much development may be permitted in the future. This report includes an estimate of the impacts of potential changes in sewer service areas and use of much lower nitrate dilution targets for areas served by septic systems.

The Center did not use water and wastewater treatment capacity data to evaluate whether the vacant land capacity estimates in this report generate water demand that exceeds the capacity of the local provider or ground water resource, or effluent flows that exceed the treatment capacity of any sewer service area. Nor did it have any technical or other information that would allow it to determine whether such exceedances could be remedied by expansion of existing facilities and building of new plants.

Over the course of several meetings and discussions with senior NJ Department of Environmental Protection officials, they identified several wastewater treatment facilities that had current capacity constraints, others where expansion might be constrained in the future because of discharge stream conditions and others that would have little or no problem with future expansions. Efforts were described as being underway to resolve several of the largest current capacity problems through repairs and improvements to old and damaged collection systems, upgrades and/or expansions of the sewage treatment plants themselves. These large investments will take several years to produce results, but when completed the facilities should be able to meet projected buildout demand.

Several other facilities could reach capacity over the near term if historical growth rates continue, and they will likely require costly upgrades in treatment technology, use of distributed treatment works, consideration of beneficial gray water reuse and other alternatives to meet long-term projected demand. Funds could be available through the New Jersey Environmental Infrastructure Trust, which has provided more than $4.3 billion in low interest long-term loans over the past 20 years to fund drinking water, wastewater and storm water projects. For these reasons, a more in-depth analysis is needed to determine the most cost effective and environmentally sound wastewater management alternative to meet potential long-term buildout demand. A further assessment will then be required to determine whether those costs can be sustained by the existing and future users of those facilities, consistent with the notion of providing "affordable" housing. This assessment is required through the development and adoption of wastewater management plans under the pending WQMP Rules.

The pending WQMP Rule will require that each of the 21 counties in the state develop a comprehensive long-term wastewater and water management plan to replace the 190 plans now in use, the overwhelming majority of which are out of date. These plans will be required to address any inconsistencies between buildout demand versus treatment capacity and water availability. Ultimately, these plans will inform the vacant land and development capacity analysis prepared by COAH.

5.0 Redevelopment Potential

Many of the State's older urban and suburban communities have experienced redevelopment of former industrial and commercial sites into large residential, retail and mixed uses over the past 20 years. Former landfills in Elizabeth and Bayonne have been converted into a shopping center and golf course respectively; the Newark Bears and Trenton Thunder baseball stadiums have been built of former industrial sites; and former contaminated industrial areas along the Hudson River, in downtown Newark, Trenton and many other cities have been converted into dense residential housing mixed with some retail and commercial space. Often in conjunction with broader redevelopment of these areas, older and poor quality housing has been demolished and more dense market rate and affordable housing has been constructed in its place. Unfortunately, although these changes are visible to anyone traveling the State, no central database has been developed to provide information on how many acres have been redeveloped, for what uses and at what densities. The Center has attempted to fill this void with analyses of land use and residential density changes, and to thus estimate the amount of new housing that has been created through redevelopment across the State in the recent past, and thus what might be reasonably expected to occur in the future.

5.1 Residential Redevelopment

An analysis was made of residential development between 1990 and 2000 and its impact on land use and residential densities at the municipal level as a method of estimating the amount of residential redevelopment that had occurred over this period. The Center identified 121 municipalities that had a weighted average residential density in 1990 of at least 2 DUs per acre and whose new construction density over the 1990-2000 time period was at least 50% higher. The new construction density was calculated by dividing the change in housing units reported by the U.S. Census over these 10 years, by the change in residential developed land over this period per a linear interpolation of the DEP LU/LC data for 1986 and 2002. These municipalities had an average 1990 density of 5.36 DUs per acre and an estimated new construction density of 13.23 - a rate about 2.5 times that of what existed in 1990.

The 121 municipalities were almost evenly distributed between the six COAH Regions, with Region 2 having the greatest participation (27.9% of its 104 municipalities) and Region 4 having the lowest (19.4% of its 98 municipalities). More than three-quarters of the communities were classified as Suburban, and there were more classified as Exurban or Rural (total of 17) versus Urban (12).

A total of 60,988 housing units were constructed over this ten year period. If this construction had been at the 1990 municipal average residential densities, only 24,692 housing units would have been built. Thus, the inference is that redevelopment of existing housing units at higher densities produced the additional 36,296 units over this period. Continued redevelopment of older housing stock at such a rate would produce an average of 3,630 new units annually.

5.2 *Non-Residential Land Redevelopment*

A spatial analysis was made of changes in lands classified as non-residential developed (ID #2, Exhibit A - Data Dictionary) in the DEP's LU/LC data between 1986 and 2002 at the municipal level, together with changes in lands classified as residentially developed over this same period, as well as changes in total households from U.S. Census data in 1990 and 2000, to identify and estimate the amount of developed non-residential lands that had been converted to residential use. This analysis found 125 municipalities that had lost non-res developed lands over this 16 year period that could be reasonably traced to new residential development. A total of 4,202 acres were converted over this period, or an average of 262.6 acres per year. Although perhaps smaller than what many would expect given the redevelopment that has occurred along the Hudson River and other areas of the State, it is reflective of the long and sometime difficult process involved in cleaning up what are often contaminated (brownfield) sites. Proposed changes to soil and groundwater remediation standards in the State will make conversion of some of the better located sites to residential use more difficult, but this change in cost-benefit relationship should increase the value and opportunity for residential and mixed-use redevelopment of the hundreds of other former industrial and commercial sites located across the State.

Applying the average densities for each county determined in the residential redevelopment analysis to the conversion of non-residential lands estimated above, indicates that redevelopment of these lands would occur at an average rate of 13.2 DUs per acre. This estimate is at the lower end of the median densities of all urban type communities located in Planning Area 1, which range between 13.84 and 22.73, and well below the 25 DUs per acre density used by the Meadowlands in its Planned Residential zone. Redeveloping former industrial and commercial sites often requires demolition and removal of steel and concrete structures, as well as removing contaminates to residential standards. A pro-forma financial analysis prepared by Econsult indicates that a 25 percent increase in residential density is required to offset a 6 percent increase in construction costs and that a 15 percent increase would be needed to offset a 4 percent cost increase. Given these different considerations, the Center assumed that non-residential land redevelopment would occur at densities 15 percent higher than the average estimated residential redevelopment density of each county, as determined in the above referenced study (an average of 15.2 DUs per acre). This will generate about 3,996 new residential units annually.

An analysis prepared by Econsult found that this level of estimated non-residential redevelopment would have accounted for an average of about 14.7 percent of all residential housing growth that occurred between 1993 and 2002, and is a reasonably good estimate of future housing capacity associated with redevelopment.

5.3 *Redevelopment Summary*

This historical based rate of redevelopment is expected to increase in future years, as the combination of smart growth incentives and environmental constraints shift growth away from rural areas and toward the state's urban and suburban areas that have critical transportation, water, wastewater and other infrastructure assets. In-fill development in these areas will quickly consume any remaining vacant land and increase the value of land occupied by former or underutilized industrial and commercial sites located in residential areas. Demand for additional housing will also result in many older single and multi-family housing units being demolished and replaced with more dense townhouses and mixed use condo developments. Redevelopment of older housing stock at higher densities and the redevelopment of former industrial and commercial lands could become the major source of housing for many of the state’s older communities. Redevelopment could thus provide a significant proportion of the state's residential housing units needed in the future.

6.0 Growth Area Capacity

The State Development and Redevelopment Plan divides the State into planning areas that share common conditions with regard to development and environmental features, and refers to Metropolitan (PA-1), Suburban (PA-2) and Designated Centers as Areas for Growth. The Center believes that growth can also be supported on other lands that are located within a sewer service area. Development will also occur at much lower densities outside both of these areas, in more rural and environmentally sensitive areas that must be served by on-site septic treatment systems. The following is a breakout of the vacant land and capacity results for growth areas and those that will require septic treatment systems, by COAH Region.

Growth Areas:

COAH Region	Vacant Land (acres)	Pct. of Total COAH Region	Residential Housing Units	Pct. of Total COAH Region	Square Feet Space (000s)	Pct. of Total COAH Region
1	19,704	20.4	53,802	60.8	158,095	91.1
2	36,216	35.6	62,964	74.5	191,735	86.3
3	46,953	29.6	93,324	81.3	176,600	88.2
4	64,272	35.7	112,879	83.7	124,593	91.1
5	56,597	28.5	118,999	81.7	172,495	89.2
6	69,457	25.0	81,276	56.7	106,297	64.6
Totals	*293,200*	*29.0*	*523,244*	*73.5*	*929,815*	*85.3*

Areas Served by Septic Systems:

COAH Region	Vacant Land (acres)	Pct. of Total COAH Region	Residential Housing Units	Pct. of Total COAH Region	Square Feet Space (000s)	Pct. of Total COAH Region
1	76,720	79.6	34,703	39.2	15,423	8.9
2	65,457	64.4	21,560	25.5	30,463	13.7
3	111,760	70.4	21,534	18.7	23,524	11.8
4	115,630	64.3	21,910	16.3	12,228	8.9
5	142,063	71.5	26,567	18.3	20,859	10.8
6	207,863	75.0	62,152	43.3	58,290	35.4
Totals	719,492	71.0	188,426	26.5	160,787	14.7

Although the growth areas contain only 29.0 percent of the State's vacant lands, these lands, because of their location and access to centralized wastewater treatment systems have the capacity to support 73.5 percent of the total residential housing that could be built and 85.3 percent of all non-residential floor area space in the State.

7.0 Conclusions

As noted in the Introduction, this analysis of vacant land in New Jersey and its capacity to support future growth was to be used for three primary purposes:

- To determine if there is sufficient vacant land and remaining development capacity to support the State's projections of growth in households and employment out to at least the year 2018;
- To determine if there is sufficient vacant land and remaining development capacity in growth areas of the State as a whole and in each of the COAH Regions, to support the use of a growth-share methodology and growth-share ratios for distributing affordable housing needs; and,
- To provide an estimated upper ceiling or limit on the amount of household and employment growth that each of the 566 municipalities in the State will be able to absorb before it becomes fully developed.

The Center believes that each of these objectives has been achieved.

> Of the State's approximate 4.98 million acre total area, about 1.01 million acres are undeveloped and unconstrained and thus available for future development. This estimate is much lower than those discussed previously by state planning officials, and reflects the recent establishment of the New Jersey Highlands and other initiatives intended to reduce the adverse environmental impacts of development on critical water and other natural resources in many areas of the State. However, it is important to put this estimate into the context of the State's land uses over time. All of the growth and development that has occurred in the 240 years since our nation was founded has only used 1.42 million acres or 28 percent of the state's total area. Remaining vacant lands have a capacity to provide an additional 711,670 residential housing units, or about 2.5 times the projected growth of 280,397 new housing that would need to be constructed between 2004 and 2018. Even if no development were permitted on lands outside of a sewer service area, the 292,975 acres of vacant land within the State's growth areas have a residential development capacity that is 1.9 times this projected housing need.
>
> The redevelopment of former commercial and industrial lands for mixed use and residential purposes, and the redevelopment of existing older and lower quality housing stock into new more dense townhouses and condo buildings, has created an estimated 7,626 additional new housing units per year in recent years. The conversion of non-residential lands to mixed use and residential uses, by itself, appears to have accounted for an average of 14.7 percent of the state's housing

growth between 1993 and 2002. Redevelopment could thus provide a significant proportion of the state's estimated residential housing needs over the 2004-2018 time frame associated with the 3rd Round Rules and substantially reduce the need for new construction on currently vacant land.

Taken together, there is clearly sufficient vacant land, future development capacity and redevelopment potential to support the State's projected growth in population, households and employment well beyond 2018.

- As described in Section 6, and further noted above, only 29 percent of the State's vacant lands are located in State Planning Areas 1 or 2, a Designated Center or other areas having access to centralized wastewater treatment systems (collectively referred to as Growth Areas). However, these locations have transportation, education, water, wastewater and other critical infrastructure assets, as well as cultural, higher education, shopping and other amenities that will attract and support considerable additional growth. The Center's analysis indicates that together these Growth Areas have the capacity to support 73.5 percent of the total residential housing that could be built in the State and 85.3 percent of all non-residential floor area space. An examination of the results for each of the six COAH Regions indicates that no less than 56.7 percent of the housing capacity and 64.6 percent of the non-residential floor space capacity is located within the Growth Area of that Region. In half the Regions about 81-84 percent of the housing capacity and 89-91 percent of the non-residential floor space capacity is located within its Growth Area.

  The redevelopment of former industrial, commercial and municipal landfill sites into mixed use and residential complexes has largely been occurring in New Jersey's older urban and suburban ("Growth") areas, and will thus provide additional capacity to meet a significant proportion of the state's residential housing units needed in the future.

  The magnitude of these results clearly indicate that there is sufficient vacant land and remaining development and redevelopment capacity in growth areas of the State as a whole and in each of the COAH Regions, to support the use of a growth-share methodology and growth-share ratios for distributing affordable housing needs.

Exhibit A

Anderson Land Use/Land Cover Data Dictionary

Developed Land

ID #		LU2002_code	Label_02
1	**Residential**	**LU2002_code**	**Label_02**
		1110	RESIDENTIAL, HIGH DENSITY, MULTIPLE DWELLING
		1120	RESIDENTIAL, SINGLE UNIT, MEDIUM DENSITY
		1130	RESIDENTIAL, SINGLE UNIT, LOW DENSITY
		1140	RESIDENTIAL, RURAL, SINGLE UNIT
		1100	RESIDENTIAL
		1150	MIXED RESIDENTIAL
2	**Non-Residential**	**LU2002_code**	**Label_02**
		1200	COMMERCIAL/SERVICES
		1300	INDUSTRIAL
		1500	INDUSTRIAL/COMMERCIAL COMPLEXES
		1600	MIXED URBAN OR BUILT-UP LAND
		7300	EXTRACTIVE MINING
3	**Other - Military**	**LU2002_code**	**Label_02**
		1211	MILITARY RESERVATIONS
4	**Other - Transitional**	**LU2002_code**	**Label_02**
		7500	TRANSITIONAL AREAS
		7400	ALTERED LANDS
		7430	DISTURBED WETLANDS (MODIFIED)
5	**Other - Plat**	**LU2002_code**	**Label_02**
		1400	TRANSPORTATION/COMMUNICATIONS/UTILITIES
		1410	MAJOR ROADS
		1419	BRIDGE OVER WATER
		1440	AIRPORT FACILITIES
		1461	WETLAND RIGHTS-OF-WAY (MODIFIED)
		1462	UPLAND ROW (undeveloped)
		1463	UPLAND ROW (undeveloped)
		1499	STORM WATER BASIN
		1701	OTHER URBAN OR BUILT-UP LAND (developed)
		1710	CEMETARY
		1711	CEMETRAY ON A WETLAND
		1800	RECREATIONAL LAND
		1804	ATHLETIC FIELDS (SCHOOLS)
		1810	STADIUMS, CULTURAL CENTERS & ZOOS
		1850	MANAGED WETLAND IN BUILT-UP MAINTAINED REC AREA

NOTE: The code "1701" was assigned by NCNBR and is not a standard Anderson LULC code. Richard Grabowski of the NJDEP used 2002 aerial imagery to identify lands in the "1700" category that should be considered developed. These developed "1700" lands have been given the new designation "1701"

Undeveloped Land - Available

		LU2002_code	Label_02
6	**Undeveloped-Other**		
		1700	OTHER URBAN OR BUILT-UP LAND (undeveloped - see Note above))
		1741	PHRAGMITES DOMINATED URBAN AREA
		7600	UNDIFFERENTIATED BARREN LANDS
		1214	FORMER MILITARY; INDETERMINATE USE

		LU2002_code	Label_02
7	**Undeveloped-Agriculture**		
		2100	CROPLAND AND PASTURELAND
		2200	ORCHARDS/VINEYARDS/NURSERIES/HORTICULTURAL AREAS
		2300	CONFINED FEEDING OPERATIONS
		2400	OTHER AGRICULTURE
		2260	CRANBERRY FARMS

		LU2002_code	Label_02
8	**Undeveloped-Forest**		
		4110	DECIDUOUS FOREST (10-50% CROWN CLOSURE)
		4120	DECIDUOUS FOREST (>50% CROWN CLOSURE)
		4210	CONIFEROUS FOREST (10-50% CROWN CLOSURE)
		4220	CONIFEROUS FOREST (>50% CROWN CLOSURE)
		4230	PLANTATION
		4311	MIXED FOREST (>50% CONIFEROUS WITH 10%-50% CROWN CLOSURE)
		4312	MIXED FOREST (>50% CONIFEROUS WITH >50% CROWN CLOSURE)
		4321	MIXED FOREST (>50% DECIDUOUS WITH 10-50% CROWN CLOSURE)
		4322	MIXED FOREST (>50% DECIDUOUS WITH >50% CROWN CLOSURE)
		4410	OLD FIELD (< 25% BRUSH COVERED)
		4411	PHRAGMITES DOMINATED OLD FIELD
		4420	DECIDUOUS BRUSH/SHRUBLAND
		4430	CONIFEROUS BRUSH/SHRUBLAND
		4440	MIXED DECIDUOUS/CONIFEROUS BRUSH/SHRUBLAND
		4100	DECIDUOUS FOREST
		4200	CONIFEROUS FOREST
		4310	MIXED WITH CONIFEROUS PREVALENT (> 50% Coniferous)
		4320	MIXED WITH DECIDUOUS PREVALENT (> 50% Deciduous)
		4400	BRUSH/SHRUBLAND
		4500	SEVERE BURNED UPLAND FOREST

		LU2002_code	Label_02
9	**Undeveloped-Wetlands**		
		1750	MANAGED WETLAND IN MAINTAINED LAWN GREENSPACE
		2140	AGRICULTURAL WETLANDS (MODIFIED)
		2150	FORMER AGRICULTURAL WETLAND-BECOMING SHRUBBY, NOT BUILT-UP)
		6210	DECIDUOUS WOODED WETLANDS
		6220	CONIFEROUS WOODED WETLANDS
		6231	DECIDUOUS SCRUB/SHRUB WETLANDS
		6232	CONIFEROUS SCRUB/SHRUB WETLANDS
		6233	MIXED SCRUB/SHRUB WETLANDS (DECIDUOUS DOM.)
		6234	MIXED BRUSH AND BOG WETLANDS, CONIFEROUS DOMINATE
		6240	HERBACEOUS WETLANDS

6241	PHRAGMITES DOMINATED INTERIOR WETLAND
6251	MIXED FORESTED WETLANDS (DECIDUOUS DOM.)
6252	MIXED FORESTED WETLANDS (CONIFEROUS DOM.)
6500	SEVERE BURNED WETLANDS
8000	MANAGED WETLANDS (Modified)
6221	ATLANTIC WHITE CEDAR WETLANDS

Undeveloped Land - Unavailable

10	Undeveloped-Unavailable Wetlands	LU2002_code	Label_02
		6110	SALINE MARSHES
		6111	SALINE MARSH (low marsh)
		6112	SALINE MARSH (high marsh)
		6120	FRESHWATER TIDAL MARSHES
		6130	VEGETATED DUNE COMMUNITIES
		6141	PHRAGMITES DOMINATED COASTAL WETLANDS
		7100	BEACHES
		7200	EXPOSED ROCK

11	Undeveloped-Unavailable Water	LU2002_code	Label_02
		5410	TIDAL RIVERS, INLAND BAYS AND OTHER TIDAL WATERS
		5411	OPEN TIDAL BAYS
		5420	DREDGED LAGOON
		5430	ATLANTIC OCEAN
		5100	STREAMS AND CANALS
		5200	NATURAL LAKES
		5300	ARTIFICIAL LAKES

Exhibit B

Spatial Data List

NJDEP 2002 LU/LC by WMA – WMA 1-20
-*w01lu02.shp … w20lu02.shp*
The NJDEP's Land Use Land Cover data is acting as the main base layer from which areas deemed not to be available for future development will be removed. These include the LU/LC categories Developed Land, Undeveloped-Unavailable Land, and Undeveloped Wetlands listed in Exhibit A.

NJDEP 2002 LU/LC Code 1700 Update
-*BaseLayer.gdb*
This update identifies areas such as roads and other high percent impervious surface areas within the 1700 Other Urban classification, which will be reclassified as already developed.

State Plan 3
-*splan3.shp*
The NJ State Plan 3 is the most recent version of the State Plan Policy Map. It contains the legislative boundaries of the Pinelands and Meadowlands, which will be subtracted from the LU/LC base layer and addressed separately. It will also be used in the analysis and the application of buildout densities appropriate to different types of land use across the state.

Highlands Region Boundary
-*HighlandsRegion.shp*
The Highlands Region Boundary file will be used to define the area to be subtracted from the LU/LC base layer. The Highlands Region will be addressed separately.

Open07 – 2007 Open Space File
-*open07.shp*
This file contains the most current data on public open space, parks, etc. These areas will be subtracted from the LU/LC base layer.

Non Profit Open Space – Private Open Space
-*np_polygon.shp*
-*npe_polygon.shp*
This data set shows areas classified as privately owned open space, and will also be subtracted from the LU/LC base layer.

Surface Water Quality Standards
-*swqs.shp*
The NJDEP's Surface Water Quality Standards data will be used to extract C1 streams. The Center will calculate and insert a 300 foot buffer on each side of these streams, and subtract these areas from the LU/LC base layer.

New Jersey Farmland Preservation Program
-*njfpp.shp*

The New Jersey Farmland Preservation Program data will be used to identify farmland that is currently protected by the program, and therefore is not available for development. These areas will be subtracted from the LU/LC base layer.

Highlands Open Waters Protection Area (Draft)
-*HighlandsOpenWatersProtectionAreaDraft.shp*
This layer was used exclusively as an additional land constraint in the Highlands region. It removes a 300 foot buffered area from around all streams, rivers, lakes and wetlands in the Highlands, as identified by the New Jersey Highlands Council.

Slope Greater Than 10 Percent
-*g_10percent_m.shp*
This layer was used exclusively as an additional land constraint in the Highlands Preservation Area. It removes undeveloped slopes greater than 10 percent in the Highlands, as identified by the New Jersey Highlands Council.

Slope Greater Than 15 Percent, Undeveloped (Draft)
-*SlopeGreaterThan15PercentUndevelopedDraft.shp*
This layer was used exclusively as an additional land constraint in the Highlands Planning Area. It removes undeveloped slopes greater than 15 percent in the Highlands, as identified by the New Jersey Highlands Council.

Highlands Open Space
-*openspace.shp*
This layer was downloaded from New Jersey Highlands Council web site. This layer represents open space within the NJ Highlands Region and is a compilation of many different data sources that include federal, county, local, and non-profit groups.

Pinelands Management Areas
PinelandsMgmtAreas.shp
This **layer** [file] was obtained from the New Jersey Pinelands Commission. It outlines the Boundaries of the Management Areas defined by the Commission and is used to set buildout densities in the Pinelands region.

Sewer Service Area
-*statessa.shp*
This layer outlines the NJDEP-defined boundaries of sewer service areas in the state. This layer is used to define buildout densities (“Build Type”) in all models outside the Highlands Preservation Area.

Center boundaries of the NJ State Development and Redevelopment Plan
-*cenlne2.shp*
This layer was obtained from the NJDCA’s Office of Smart Growth. It outlines the boundaries of designated and proposed Growth Centers of New Jersey. Only designated centers are used to define buildout densities in all models outside the Highlands Preservation Area.

DEP Landscape data for Ranks 2 through 5
-*LandscapeV3-Ranks2345-PresArea-DIS.shp*
This layer represents areas where special protection is given to rare and endangered species and was provided by the NJDEP on CD. These areas are removed from the available land in the Highlands Preservation Area.

National Heritage Priority sites
-*prisites.shp*
This layer outlines the NJDEP-defined areas where protection is given to rare natural communities. These areas are removed from the available land in the Highlands Preservation Area.

Bedrock Geology of New Jersey
-*geology.shp*
This layer was downloaded from New Jersey Geological Survey. The layer consists of statewide and countywide data layers (contacts, faults, folds, dikes). The GIS data were scanned and digitized from United States Geological Survey Miscellaneous Investigations and Open-File Series 1:100,000 scale geologic maps compiled from 1984 to 1993.

New Jersey FEMA Floodplain Update (Draft)
-*njfema.shp*
The layer was provided by New Jersey Department of Environmental Protection. The layer contains the latest information of FEMA Map Modernization Program for Bergen, Camden, Essex, Hudson, Ocean, Passaic, Somerset, and Union Counties.

Surface Water Quality Standards: 300' Buffers (Draft)
-*swqs300.shp*
The layer was provided by New Jersey Department of Environmental Protection. The layer was used to identify streams requiring 300 feet buffers around its riparian zone.

Surface Water Quality Standards: 150' Buffers (Draft)
-*swqs150.shp*
The layer was provided by New Jersey Department of Environmental Protection. The layer was used to identify streams requiring 150 feet buffers around its riparian zone.

Surface Water Quality Standards: 50' Buffers (Draft)
-*swqs50.shp*
The layer was provided by New Jersey Department of Environmental Protection. The layer was used to identify streams requiring 50 feet buffers around its riparian zone.

Exhibit C

COAH Regions - Counties

COAH Regions – Counties

REGION 1
Bergen
Hudson
Passaic
Sussex

REGION 2
Essex
Morris
Union
Warren

REGION 3
Hunterdon
Middlesex
Somerset

REGION 4
Mercer
Monmouth
Ocean

REGION 5
Burlington
Camden
Gloucester

REGION 6
Atlantic
Cape May
Cumberland
Salem

NEW JERSEY COUNCIL ON AFFORDABLE HOUSING
TASK 1 – ALLOCATING GROWTH TO MUNICIPALITIES

Submitted To:
New Jersey Council on Affordable Housing
101 South Broad Street
Trenton NJ 08625

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May 1, 2008

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Overview

In January 2007, the Appellate Division overturned portions of COAH's Round 3 growth share methodology and requested additional analysis to support the use of a growth share approach. The Court also directed COAH to determine how much vacant land is available in growth areas of the state.

The Court's request framed the work in Task 1 of the project undertaken by the Econsult Corporation and the Rutgers' National Center for Neighborhood & Brownfields Redevelopment (NCNBR). Specifically, Econsult's part of Task 1 is to provide municipality level 2018 projections of housing units and employment, and the implied net changes between 2004 and 2018. These projection results and the inputs from other Tasks will form the base data for COAH to determine the statewide affordable housing obligations. [These estimates are projections into the future and therefore actual growth will differ from the projections.]

The New Jersey Department of Labor and Workforce Development (NJLWD) currently makes projections of population and employment for each county in the state at various projection years. Task 1 provides a method for allocating county projections among the municipalities in each county for the year 2018. The method provides estimates of 2018 housing units and employment for each municipality consistent with the NJLWD population projections. It should be noted projections are neither predictions nor forecasts. The NJLWD, in its discussion its county projections, provides a good perspective on the nature of projections stating that projections

> …reflect identifiable long-term economic and demographic trends which have been implicitly or explicitly incorporated into the models. In other words, the projections are an extrapolation of past and current trends into the future. These projections do not take into account any current or future policy initiatives. They are not intended to constrain or to advocate specific levels of growth in the state. These projections are best used as a reference framework for planning, research, and program evaluation.

1.2 Projection Horizon, Major Estimation Years and Historical Growth Trends

The projection horizon for Task 1 is 2018. While the original Round 3 regulations covered the period through 2014, the projection period for this revision of Round 3 regulations has been extended to 2018 so that the period could reflect an entire housing cycle. Because housing prices and production vary over long periods of time with rapid growth in some periods and slow growth in others, the research team determined that the period should be extended so that that the projection would reflect both strong and weak times in the housing market. Given the very strong housing market in New Jersey until recently, it is likely that a projection period that stopped in 2014 would have disproportionately captured a relatively slow part of the housing cycle, given the proposed rules focus on the period 2004-2018.

Although the projection period focuses on 2004-2018, the base year for the analysis is 2002, which is the latest year for which all necessary data are available for the required vacant land analysis performed by NCNBR. Data are extrapolated to 2004 to reflect the beginning of the period of growth that will be used by COAH to measure affordable housing obligations. Thus, the operating projection period in Task 1 is from 2002 to 2018. For consistency, the current Round 3 COAH rules use employment projections for the same period. To be consistent with the revised time frame for Round 3 COAH, housing and employment figures are reported for each municipality for the following years: 2002, 2004, and 2018.

NJLWD county projections are allocated to the municipal level based on historical trends for each municipality and the extent to which each municipality approaches its physical growth capacity. We measure actual municipal growth in the nine years prior to 2002. The beginning of the nine-year period in 1993 is the earliest year for which NJLWD provides employment data at the municipality level. To be consistent with the employment allocation model, the housing unit model also adopts 1993 as the beginning year for measuring municipal growth rates for housing.

1.3 Data Sources

The primary data used in the allocation model provided include: data available from the NJLWD, land capacity estimates provided by NCNBR, and data from the U.S. Census Bureau's 1990 and 2000 Census. These data include historical figures on population and employment at the municipal level and future projections at the county level. Data from post 2002 American Community Survey (ACS) is also used for gauging trends and various ratio analyses at the county level.

1.3.1 NJLWD County Projections

In May 2007, COAH, the University of Pennsylvania research team, and Econsult agreed to use county projections of population and employment provided by NJLWD in the Task 1 allocation models. These projections are the control totals for each county; that is, estimates of for each municipality are forced to sum to the population and employment data for that county. These restrictions ensure that municipal estimates will be consistent with county projections.

While other projections exist, most notably Metropolitan Planning Organization (MPO) projections, the population and employment projections provided by the NJLWD were chosen to provide the county control totals for population and employment for several reasons. First, there is a common methodology for forecasting population and employment for all New Jersey Counties. Methodological and data consistency is the primary concern in choosing a set of projection data that applied uniformly across the state. Since the NJLWD projection models have built-in connection of population and economic changes, the projection method is not only consistent across geography but across sectors.

Prepared separately by three different MPOs, the county projections from MPOs do not add up to an agreeable state total. Since the South Jersey Transportation Planning Organization (SJTPO) does not report its projection methodology in its website, we cannot evaluate it in details. The county population projection models used by Delaware Valley Regional Planning Commission (DVRPC) and the North Jersey Transportation Planning Authority (NJTPA) are similar in terms of using countywide and region-wide cohort survival techniques, but their county employment models differ significantly. DVRPC uses an employment-to-population/household method while NJTPA uses the NJLWD, the New York Metropolitan Transportation Council (NYMTC) and a regional shift-share method to estimate the county employment range. NJLWD projections, on the other hand do not have such methodological inconsistencies.

The NJLWD approach provides a consistent methodology in its projection of county population and employment by industry (work place based). It is reported in http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi03/method.pdf.

NJLWD developed and compared the merit of four projections models:

- Economic-Demographic Model
- Historical Migration Model
- Zero Migration Model
- Linear Regression Model

NJLWD chose the Economic-Demographic Model as the preferred model for the county population and employment projection. In this model, related methods are used. Cohort-survival method is used to project population initially but the projection is adjusted by how future labor demand affects age-specific migration.

It should be noted that MPO's make some projections at the municipal level. However, each MPO distributes the county totals to municipalities in different manners. Again, SJTPO does not report its method. The allocation method used by NJTPA is similar to the Econsult method. However, DVRPC focuses on adjusting the difference in the current forecast and the previous one; and relies much on the input of county planning staff to revise the municipal forecasts. Once again, the inconsistency is problematic for developing statewide rules.

2018 County Population Projections

NJLWD's Projections of Total Population by County: 2004 to 2025 (http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi03/Table1.pdf) provides county population projections for 2009, 2014, 2020, and 2025. The NJLWD projection figures are reported to the nearest 100 persons. An interpolation of the 2014 and 2020 projections in this table generated the implied 2018 county population projection that serves as the county control total in the Task 1 housing allocation model.

2018 County Employment Projections

NJLWD's Projections of Total Employment by County: 2004 to 2014 (http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi04/index.html#ind) provides tables of industry employment projections for each county in New Jersey. Unlike the occupational employment tables that contain data on employment held by county residents regardless of work location, these 21 tables report numbers of people working each county regardless of residence location. Each table reports the 2014 projected employment level for the private sector, local government, state government, and federal government, as well as the actual 2004 employment level. To keep a range of projection, these figures are rounded to the nearest 50 jobs.

Since no state government employment is reported at the municipal level, any model to distribute county employment to municipalities cannot accurately allocate employment in this sector. This point will be further elaborated in Section 3.2.2. As such, the employment sum of the private sector, local government and federal government of each county serves as the control total instead of the total employment.

NJLWD does not provide the 2018 projection, so it has to be extrapolated from known historical trends. An annualized growth rate was computed based on the 2002 county employment estimates (from http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi14/cvremp02.zip) and the 2014 county projection mentioned above (both exclude the state government sector). This rate is applied to extrapolate the 2018 county employment projections (covering only the private sector, local government and federal government) that serve as the control totals for the 2018 municipal employment projections.

1.3.2 NJLWD Historical Estimates[1]

The historical data at the municipal level are crucial for the allocation model because they exhibit the historical growth rates of each municipality, particularly the reference period between 1993 and 2002. They are also used to evaluate how historical growth affected by its respective build-out constraint. The

[1] The three MPOs report population and employment at the municipality level through 2000 to 2030 at five year intervals, but not for earlier years. Since we adopted the NJLWD projection, the MPO data is used for reference only.

municipal population and employment estimates in 2002 are critical in the allocation model because the initial allocation (before taking into account various constraints and spillover) is based on historical growth from 1993 to 2002 and the extent to which a municipality is built-out.

Municipal Population Data

NJLWD computes annual population estimates at the municipality level based on the estimations provided by the US Census Bureau. Two sets of NJLWD population data are used in this study. The first is a table in which NJLWD reported the residents' population by municipality for each year between 1990 and 1999 (as revised in July 2003 to make necessary adjustments for the 2000 census results): http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi02/inter9090.htm. The second is an Excel table (released in July 2007) that reports the US Census Bureau estimates of resident population for each municipality for each year between 2000 and 2006: http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi02/mcd/mcdest06.xls.

NJLWD reports these population estimates as at July 1 of each year, so the population/housing estimates in this report should be considered as mid-year figures. The 1993 and 2002 municipal population estimates were entered into the allocation model and in turn converted to housing units for the calculation of historical growth rates.

Municipal Employment Data

Compared to the population data, the employment data for New Jersey are more complicated because of data privacy requirement issues and the change from the SIC classification system to the NAICS system in the late 1990s. Consequently, the data coverage across geographical areas and sectors (private, local government, state government, and federal government) varies across years. In addition, employment estimates at the state level do not always tie to sums of local estimates.

More importantly, state government employment information is not reported by municipality. The employment allocation model in Task 1 excludes state government employment because of the absence of information to guide its distribution at the sub-county level. Statewide, about 3 percent of the total employment falls into the state government sector.

The NJLWD municipal employment data covers the period between 1993 and 1999. After 1999, the municipal employment was not reliable again until 2003. The data quality of these datasets varies tremendously because of underreporting and missing data. From several conversations with the NJLWD researchers, we have identified five years of reliable municipal employment estimates for the private sector, the local government, and the federal government that match the data reported at the state and county levels. These years are 1997 and 2003, 2004, 2005, and 2006.

The employment estimates for 1993 were reliable for the federal government and for the private sector, but the reported local government jobs were about 60 percent undercounted when compared to the state total. [2] The growth rate of local government jobs between 1997 and 2003 has been used to extrapolate backward these undercounts for each municipality. Through that process, the aggregation of local government jobs is ensured to be close to those reported at the county level as well as at the state level.

The allocation model requires employment data for 2002 as an input but NJLWD does not report employment at municipal level. To overcome this problem, the 2002 employment was interpolated for each of the three sectors (the private sector, the local government, and the federal government) between 1997 and 2003. Since the estimation is only one year backward from 2003, if any estimation error exists, it should be minimal. In addition, the 2002 estimations are summed at the county level and adjusted so that they match those reported at the county level by NJLWD.

The datasets for 1993, 1997, 2003 and 2006 can be found at:

- http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi14/muns293.zip
- http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi14/muns297.zip
- http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi14/mun/mun03.xls
- http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi14/index.html

As year round averages are not available in these three datasets, this report used the September estimates for consistency across years. Consequently, all employment estimates are treated as in September. [3]

Historical Estimates at State and County Levels

The NJLWD provides population and employment data at the state and county levels. The employment data are used to identify undercounting at the municipal level due to missing data, data suppression and undistributed portions. As mentioned above, the county employment is also used to as a control total in the correction of underestimation of the local government employment in 1993 and the estimation of the 2002 employment at the municipal level.

[2] The same undercounting of local government jobs occurred in other years except 1997 and 2003. The 1994 and 1995 data missed all federal government employment figures.

[3] In some cases the municipal employment data for 2004 and 2006 from the department of labor are not complete. Depending upon the individual situation, these data may be estimated by interpolation between years or extrapolation from previous years.

The population data can be found at:

http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi02/index.html#county.

Employment data are at:

http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi14/#.

1.3.3 NCNBR Growth Capacity Analysis

The vacant land analysis results provided by NCNBR are key data inputs to the allocation model. Based on detailed GIS analysis at the sub-municipality level, this analysis provides estimates of the potential number of housing units and the square footage of nonresidential floor space (by major types of office, retail, warehouse/industrial, and blended) that each municipality may potentially develop after 2002. These estimates are essentially "build-out" constraints for each municipality.

1.3.4 U.S. Census, American Community Survey, and Public Use Micro Sample Data

The U.S. Bureau of Census provides various data at the municipal level that are essential for Task 1, including ratios of: occupancy rate, headship rates, average household size, and housing unit/population ratios for 1990 and 2000. These data are useful for Task 1 even though they are not reported annually.

Additional data from the American Community Survey and from PUMS provide useful references, particularly for post 2002 data at the county and state levels. This data provides information about recent trends in headship rates and other ratios.

2.0 OVERVIEW OF THE ALLOCATION MODEL

The most common method used by researchers to disaggregate high-level forecasts to smaller geographic areas is the constant share allocation method. Essentially, this method first calculates the share of each smaller area in the larger area, then multiplies these shares by the projection of the larger area to derive the projections of the smaller areas.

The constant share method has three major drawbacks.

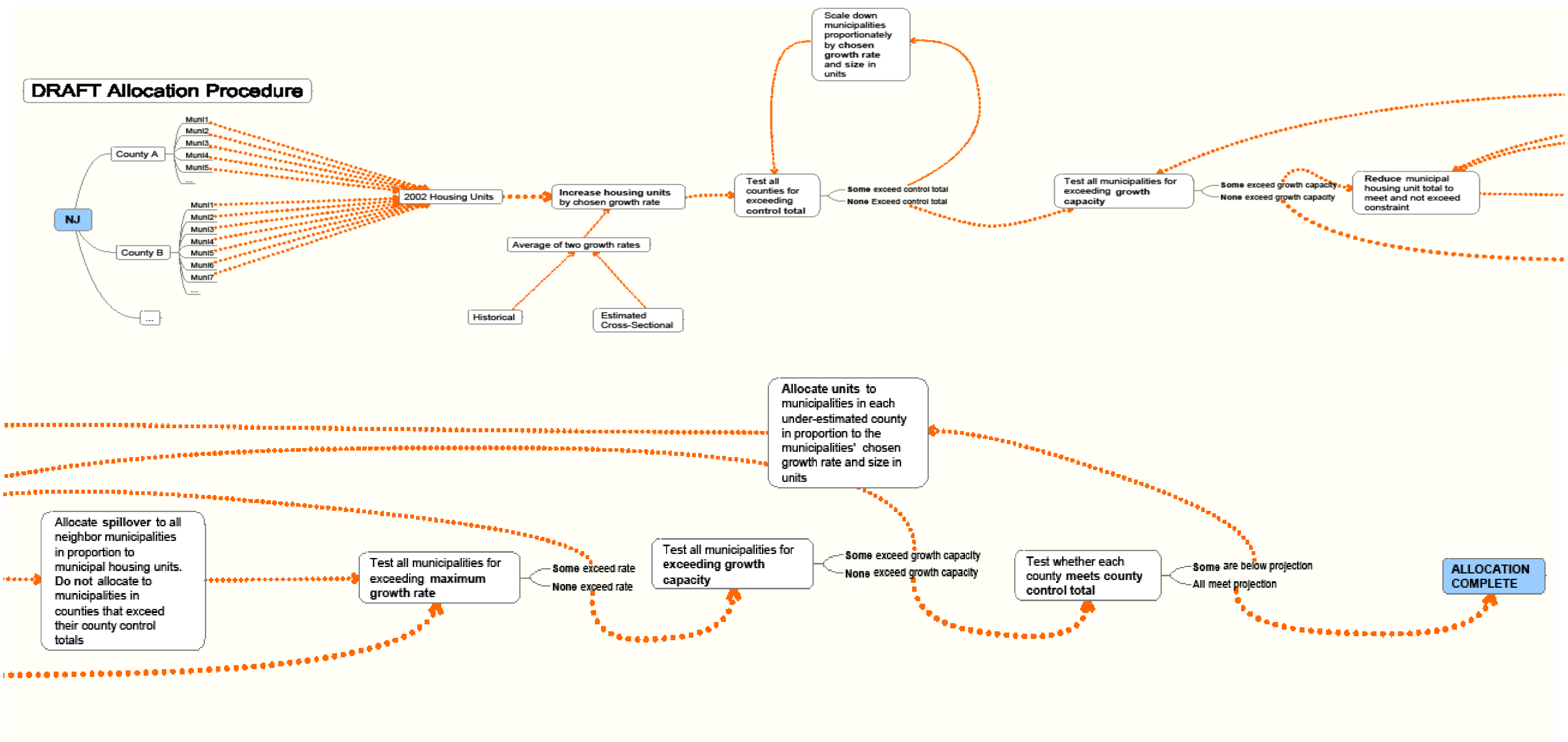
- It assumes a uniform growth rate across every sub-entity,
- It does not allow these shares to change over the projection period, and
- It does not factor in local conditions such as growth constraints.

To overcome these drawbacks, the Task 1 team developed a more sophisticated allocation model that is consistent with basic urban economic theories. This model was then used to allocate the 2018 countywide projected growth estimates across the municipalities in the county. The 2018 estimate of population was interpolated from the NJLWD data and the 2018 estimate of employment was extrapolated from the NJLWD data. There are four major inputs to the allocation model:

- NJLWD 2018 projections of population and employment at the county level
- Historical growth rates of population and employment of each municipality between 1993 and 2002
- Post-2002 growth capacity as estimated from the NCNBR vacant land analysis
- The implied growth rate estimated by a regression model on the relationship between the 1993 build-out level and historical growth rates of 566 municipalities (Exhibits A and B).

The allocation process is simple in concept but complex in implementation. The process is iterative in nature and is shown in Figure 2.1. While the flow chart is specifically for the housing model, the employment allocation model has essentially the same procedures. Below, the basic steps of the allocation model are delineated below.

Figure 2.1 – Allocation Model Flow Chart



Source: Econsult Corporation (2007)

The first step projects the 2018 housing units and employment for each municipality based on the chosen growth rate based on the average of the historical growth rate of the municipality and the implied growth rate estimated from the historical build-out level (as discussed in Exhibits A and B). These growth rates were calculated over the period from 1993 through 2006. This is a longer sample period than the sample used in the earlier set of projections and it reflects the most recent historic data available. These projections are aggregated at the county level and compared to the 2018 projections (labeled here as the county control total). [4] When the sum exceeds the county control totals, the projections are proportionately scaled down.

The second step in the allocation model is to verify that the physical growth capacity is not exceeded. The NCNBR vacant land analysis provides estimates of the maximum growth level a municipality may reach after 2002. The growth of each municipality is checked to see if such limits were achieved. [5] The 2018 projections are constrained to not exceed the municipal growth capacity.

There are two exceptions to the limits imposed by the county control totals and the municipal growth capacity constraints. The first exception is in Bergen County which has been densely developed for a number of years. The municipal growth constraints in Bergen County are so low that it is not possible for employment or housing to grow enough to reach the county control totals. The second exception occurs in a small number of municipalities where the actual growth that took place between 2002 and 2006 was larger than the estimated growth that could potentially take place after 2002 based on the NCNBR vacant land analysis. In those cases the municipal growth capacity estimate was replaced by the actual level of development during 2006.

The third step is to ensure that the projected growth rate of each municipality does not exceed the maximum of either its historical growth rate or its implied growth rate estimated from the historical build-out level.[6] This step imposes a maximum growth rate constraint and ensures that the future growth of each municipality will not be too fast based on both historical trends and the degree to which development is constrained by available land. This approach allows communities to grow faster than their historical rates, but tends to inhibit growth when a municipality is closer to complete build-out. Note that in the final step of the model, municipalities may exceed the maximum of the historical and build-out growth rate if it is required to scale to the control totals.

In the fourth step, the spillover amounts for municipalities that had growth rates beyond either the physical growth capacity or the maximum growth rate constraint (as established in the third step) are calculated. The spillover is sent to any adjacent municipalities whose growths have not reached their growth capacity or maximum growth rate. Once adjacent municipalities reach their constraints, any remaining spillover is allocated to the next ring of adjacent municipalities.

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[4] The housing unit comparison is performed after converting the 2018 municipal housing unit projection to population by applying the 2000 municipal population to housing unit ratio. Direct comparison cannot perform because 2018 housing projection is unavailable.

[5] Since the physical growth capacity only provides number of housing units for residential land, and floor space for nonresidential land, the nonresidential floor space is converted to employment before the verification. The conversion factors are discussed in Section 6.1.2.

[6] In section 5.2, we describe in more details how we apply the empirical relationship between housing growth and historical build-out level.

These four steps are repeated to see if individual municipalities exceed the growth capacity and maximum growth rate constraints after receiving a portion of the spillover. Each successive iteration results in a smaller and smaller spillover. The iterations continue until all of the spillover has been allocated and no municipality exceeds its constraints.

The fifth step is to re-check if the county sum is below the county control total after all spillover is distributed. If the two do not match within a range of 0.1, a ratio of municipal sum at the county total to the county control total is created. Then the ratio is multiplied to the 2018 projection for municipalities that have not reached their growth constraints. In other words, municipalities that have not reached their growth constraints would be scaled up so that the county sum matches the control totals. Then the second and onward steps would start again until the difference between county sum and county control total match.

The results are presented in terms of changes from 2004. The 2004 data reported for employment are based on data published by the Department of Labor; the housing data are based on 2000 Census data and are adjusted for new certificates of occupancy and demolitions through 2004. The selection of the 2004 – 2018 time frame to present the results is based on the NJCOAH planning horizon.

3.0 HOUSING ALLOCATION MODEL

3.1 Scope

The purpose of the Round 3 COAH is to estimate the statewide and regional affordable housing obligations. The housing unit, therefore, logically becomes the unit of analysis for the residential growth allocation model. Furthermore, the residential portion of the constraint developed by NCNBR's vacant land analysis for the post-2002 municipal growth capacity is expressed in dwelling units.

The U.S. Census Bureau and NJLWD do not provide housing unit figures at the municipal level on a yearly basis. Reliable housing unit figures are only reported in 1990 and 2000 (Summary Tape File 1 of the 1990 census and Summary File 1 of the 2000 census). The availability of these data allows the computation of housing unit to population ratios for 1990 and 2000. Based on these two ratios, we estimated a 1993 ratio using linear interpolation. Multiplying the interpolated 1993 ratio by the estimated 1993 population levels for each municipality provided the estimated number of housing units for each municipality in that year.

The estimation of the number of housing units after 2000 was completed in a slightly different manner. In the absence of any information on the future relationship between population and housing units, the housing unit to population ratio used in the allocation model is the 2000 ratio. In other words, it is assumed that the 2000 ratio will remain constant through 2018. The 2002 housing unit amount is projected by multiplying the estimated 2002 population by the 2000 housing unit to population ratio.

3.2 Procedure

Housing units in 2018 for each municipality were projected by initially applying the average municipal historical growth rate and the implied growth rate of growth based on the 1993 build-out level. This implied growth rate is econometrically estimated by a cross-sectional regression of 1993 to 2006 municipal housing growth as a function of the percentage of the total possible build-out that has already occurred in 1993. As expected, this estimation -- discussed in greater detail in Exhibit A -- reveals that growth slows as municipalities approach their build-out capacity. Henceforward, we refer to the growth rate implied by this cross-sectional relationship as the "build-out growth rate." The average of the historical growth rate and the implied "build-out growth rate" is used to reflect the fact that there are unique circumstances associated with individual municipalities that may not be captured in the build-out growth rate, but are reflected in the historical rates. Growth rates are expected to fall as municipalities approach complete build-out, which is reflected, in part, by averaging build-out and historical rates.

The initial projections are then scaled to be consistent with the county control totals. Since the county control totals from the NJLWD 2018 projection are in terms of population rather than housing units, it is necessary to convert the housing unit projections to population projections. The projected number of housing units per municipality was then divided by the 2000 housing unit to population ratio to derive the projected 2018 municipal population. These population figures were added at the county level and compared to the projected 2018 county control totals.

If the county control totals were exceeded, the municipal population was scaled down in proportion to its growth between 2002 and 2018, until the sum of the population within a county matched that of the county control totals. The adjusted municipal population was then converted back to housing units after the downward scaling. The new projected growth was then compared to the two constraints: a) the post-2002 physical growth capacity, and b) the maximum growth rate constraint, i.e., the maximum of its historical growth rate and the build-out growth rate.

The above step provides an estimate of the spillover of housing units for those municipalities that either reached its physical growth capacity or exceeded the maximum growth rate constraint. These spillover units were distributed to neighboring municipalities until the receiving municipalities reached growth limits (due to either physical growth capacity or the maximum growth rate constraints).

The redistribution of the spillover housing units proceeded until all units were fully allocated and none of the receiving municipalities exceeded the two growth limit conditions. Once this was achieved, a scaling up procedure was performed for municipalities in those counties for which the sum of the projected 2018 population at the county level was below the county control total, even after accepting spillover housing units from other counties. However, municipalities that have reached its maximum growth limit will not be scaled up. After this scaling up procedure, the same spillover allocation procedure was performed until the spillover was fully distributed. [7]

The allocation model provides housing unit figures for 2002 and 2018. To estimate the 2004 housing units, we use a straight-line interpolation between 2002 and 2018.

3.3 Results

In 2002, the number of residents in New Jersey was 8,577,510 and it grew to 8,675,880 in 2004. According to NJLWD, the projected state population in 2018 is 9,411,670. This implies an absolute growth of 735,790 residents between 2004 and 2018, or a total growth of 8.5 percent in that period. It is important that keep in mind that these numbers are projections 10 years into the future, based on historical experience, demographic and economic theory. Since the future does not exactly mimic the past, the actual population growth will differ from these projections.

Based on the 2000 Census and subsequent certificates of occupancy as well as demolitions it is estimated that in 2002 there were 3,385,302 housing units in New Jersey. Housing grew to 3,428,504 units in 2004.

[7] In very rare instances in which historical growth rates have been unsustainably high, primarily because they are starting from a low base, we have exogenously forced growth to slow from the historical rate.

The allocation model estimated that in 2018, New Jersey would have 3,697,952 housing units. For the 2004 to 2018 period, the net increase is 269,448 units or a total growth of 8 percent. At this rate of growth, the state will gain about 19,246 housing units per annum.

Figure 3.1 summarizes the allocation by COAH region. The fastest growth in housing units is found in COAH Region 3, 4, and 5 (in descending order), all would experience over a 9 percent growth between 2004 and 2018.

Figure 3.1 - Housing Units by COAH Region: 2002, 2004 and 2018

COAH region	Units in 2002	Units in 2004	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018*
1 - Northeast	815,923	821,701	864,193	42,492	0.36%
2 - Northwest	720,926	726,750	774,894	48,144	0.46%
3 – West Central	443,678	449,911	497,964	48,053	0.73%
4 – East Central	644,405	656,113	721,977	65,864	0.69%
5 - Southwest	468,928	478,002	522,752	44,750	0.64%
6 – South-Southwest	291,442	296,027	316,172	20,145	0.47%
New Jersey	3,385,302	3,428,504	3,697,952	269,448	0.54%

*Growth rates are calculated at a compound (exponential) annual rate
Source: Econsult Corporation (2008)

Figure 3.2 summarizes the housing allocation by county. All counties grew in housing units but the growth projected for Hudson County and Cape May County is very weak. The highest projected housing growth rates between 2004 and 2018 are found in Ocean County, Sussex County and Gloucester County (in descending order). It should be noted that the growth in housing units may not correspond to the change in population because each county has different housing unit to population ratios.

Figure 3.2 - Housing Units by County: 2002, 2004 and 2018

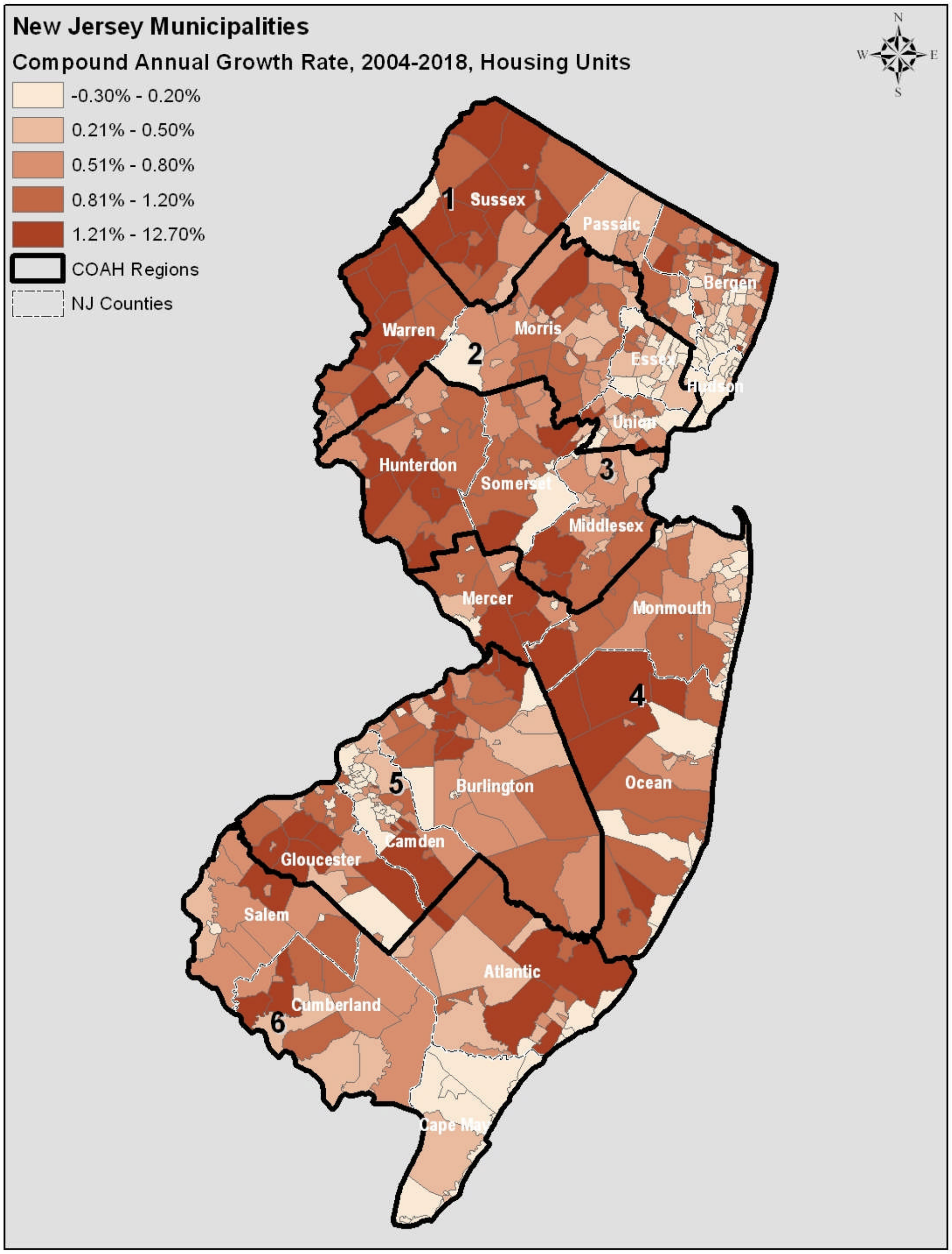
County	Units in 2002	Units in 2004	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018*
ATLANTIC	118,273	120,650	132,708	12,058	0.68%
BERGEN	343,453	344,622	363,879	19,257	0.39%
BURLINGTON	168,944	172,380	191,245	18,865	0.74%

CAMDEN	200,465	202,988	215,483	12,495	0.43%
CAPE MAY	93,085	94,234	95,682	1,448	0.11%
CUMBERLAND	53,540	54,154	58,749	4,595	0.58%
ESSEX	303,353	305,660	316,348	10,688	0.25%
GLOUCESTER	99,519	102,634	116,024	13,390	0.88%
HUDSON	242,424	244,488	247,661	3,173	0.09%
HUNTERDON	47,044	48,072	54,264	6,192	0.87%
MERCER	137,055	139,213	150,363	11,150	0.55%
MIDDLESEX	280,284	283,786	310,714	26,928	0.65%
MONMOUTH	248,411	251,796	268,102	16,306	0.45%
MORRIS	180,099	182,447	200,365	17,918	0.67%
OCEAN	258,939	265,104	303,512	38,408	0.97%
PASSAIC	171,418	172,946	184,690	11,744	0.47%
SALEM	26,544	26,989	29,033	2,044	0.52%
SOMERSET	116,350	118,053	132,986	14,933	0.85%
SUSSEX	58,628	59,645	67,963	8,318	0.94%
UNION	193,926	194,291	208,201	13,910	0.50%
WARREN	43,548	44,352	49,980	5,628	0.86%
NEW JERSEY	3,385,302	3,428,504	3,697,952	269,448	0.54%

Source: Econsult Corporation (2008)

The full allocation result by municipality can be found in Exhibit A. The housing growth between 2004 and 2018 is also illustrated in a map showing municipal rates (see Figure 3.3).

Figure 3.3 - Housing Unit Growth Rates by Municipality, 2004 to 2018



Source: Econsult Corporation (2008)

It should be noted that the projection is for total housing units in 2018 and net changes in units from 2004 to 2018. The increase in number of housing units is not, however the total number of new units that need to be constructed over the period. In addition to building the new projected here, additional units must be constructed to replace units demolished over the same period. The additional units required to offset demolition is not analyzed in this task.

4.0 THE EMPLOYMENT ALLOCATION MODEL

4.1 Scope

4.1.1 Unit of Analysis

The majority of the input data for this model are employment data. These include the 1993 and 2002 municipal employment levels and the NJLWD 2018 projected county employment levels. As indicated in Section 3, the state government sector is not reported anywhere at the municipal level, so this employment allocation model only covered three sectors: private employment, federal government, and local government. State government employment will be discussed separately. The other input data is non-residential build-out constraints.

4.1.2 Converting Floor Space to Employment

The physical growth capacity in this model is based on the data generated by the NCNBR vacant land study. The data are expressed in terms of gross floor area and are broken down into office, retail, warehouse/industrial, and others/blended for almost all municipalities.

When testing whether the future growth limit is reached with the projected employment level, it is important to translate the gross floor space into employment. Task 4 includes a literature review and a sample survey for New Jersey on employee/floor space ratios by type of uses. Here are the ratios (in terms of number of employees per 1,000 square feet of gross floor space) we recommended in Task 4:

- Office 3.32
- Retail 2
- Warehouse 1.72
- Manufacturing and Industry 1.43

These ratios could be sensitive to the estimated amount of employment based on the potential nonresidential development, so all chosen ratios in the employment allocation model were within the upper and lower bound of those recommended by Task 4. For the purposes of this analysis this resulted in an average ratio of 2.9 per 1000 feet to convert build-out square feet to employment which is close to the median ratio found in Task 4. Using an adjustment of 8% for vacancies and 15% for common areas this translates to 2.25 employees per 1000 square feet. This ratio was not identical for all municipalities because their current mix of commercial space varies by municipality.

4.2 Procedure

The employment model is similar in structure to the housing model. Statewide, the historical employment growth rate (excluding the state government sector) is approximately 1.3 percent between 1993 and 2002, but some municipalities experienced annual rates over 15 percent in this period. While the majority of such municipalities had a very small employment base in 1993, some mid-size municipalities (with 1993 employment around 2,000 jobs) like Allendale Borough in Bergen County, Swedesboro Borough in Gloucester County, and Monroe Township in Middlesex County, had annual rates exceeding 15 percent. In other words, these municipalities more than doubled their employment primarily due to new development. Such fast employment growth rates are unlikely to sustain, especially when their growth capacity is being used up. In addition, initial tests showed that the allocation based on the average of the historical rate and the build-out growth rate resulted in a high degree of spillover as many municipalities would hit the two growth constraints in the model.

In the first step, the initial municipal employment by 2018 was projected based on the average of the historical growth rate or the build-out growth rate. These initial projections were summed at the county level and compared to county control totals. In the case of exceeding the county control totals, the employment of each municipality was scaled down.

Next, the growth of each municipality was measured against its physical growth capacity to ensure that the build-out level did not exceed 100 percent of its physical development capacity. It was also compared to the maximum growth rate (either the historical rate or the build-out growth rate). The spillover was then estimated and sent to those adjacent municipalities that had the capacity to receive the spillover.

In each round of the allocation of the spillover, each receiving municipality was checked to ensure that the growth increment did not violate the two growth constraints of the model (growth capacity and maximum growth rate).

For counties that had a sum of initial projected employment less than the county control totals, their municipalities would receive cross-county spillover under the same set of constraints. The county total was then compared to the control total. If the county total was still below the control total, the municipality employment was scaled upward and the spillover allocation procedures followed.

This process resulted in a municipal allocation that summed to within 0.4% of the total statewide employment. Each county was close to its control total as well. The remaining 0.4% of employment was allocated by proportionately scaling up or down municipalities in each county such that the projections summed to the county control totals exactly and neither the growth rate nor build-out constraints were violated.[8]

[8] In this final step, adjacency was not taken into consideration.

4.3 Results

In 2002, the employment (excluding state government employees) in New Jersey was 3,640,016, slightly lower than the 1999 figures, reflecting the recession in 2000 and 2001. According to the NJLWD projected 2014 employment, it is extrapolated that in 2018, the employment would reach 4,477,889. This implies an absolute growth of 818,898 jobs between 2004 and 2018, or a total growth of 22 percent during that period. At this rate of growth, the state will gain about 58,493 jobs per annum from 2004 to 2018. Note that the NJLWD projections reflect past history and market realities. As with population, the actual employment growth will differ from that projected by the NJLWD. The full allocation result by municipality is in Exhibit B. Map 2 below shows the annual growth rate by municipality.

Figure 4.1 summarizes the employment allocation by COAH region. The fastest growth is found in COAH Region 4, which is projected to grow at an annual rate of 2.1% between 2004 and 2018.

Figure 4.1 - Employment by COAH Region: 2002, 2004 and 2018

COAH region	Employment in 2002	Employment in 2004	Employment Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
1 - Northeast	882,163	885,699	1,063,924	178,225	1.32%
2 - Northwest	879,649	877,676	1,068,027	190,351	1.41%
3 – West Central	579,185	584,742	700,025	115,284	1.29%
4 – East Central	553,902	575,027	726,719	151,693	1.69%
5 - Southwest	479,068	495,337	614,834	119,497	1.56%
6 – South-Southwest	266,049	271,208	306,625	35,417	0.88%
New Jersey	3,640,016	3,689,688	4,480,153	790,465	1.40%

Source: Econsult Corporation]

Figure 4.2 summarizes the employment growth of each county. All would increase their employment base and the highest projected growth is found in Salem County, Sussex County, and closely followed by Mercer County and Burlington County. On the other hand, Cape May County and Bergen County are projected to experience slow growth.

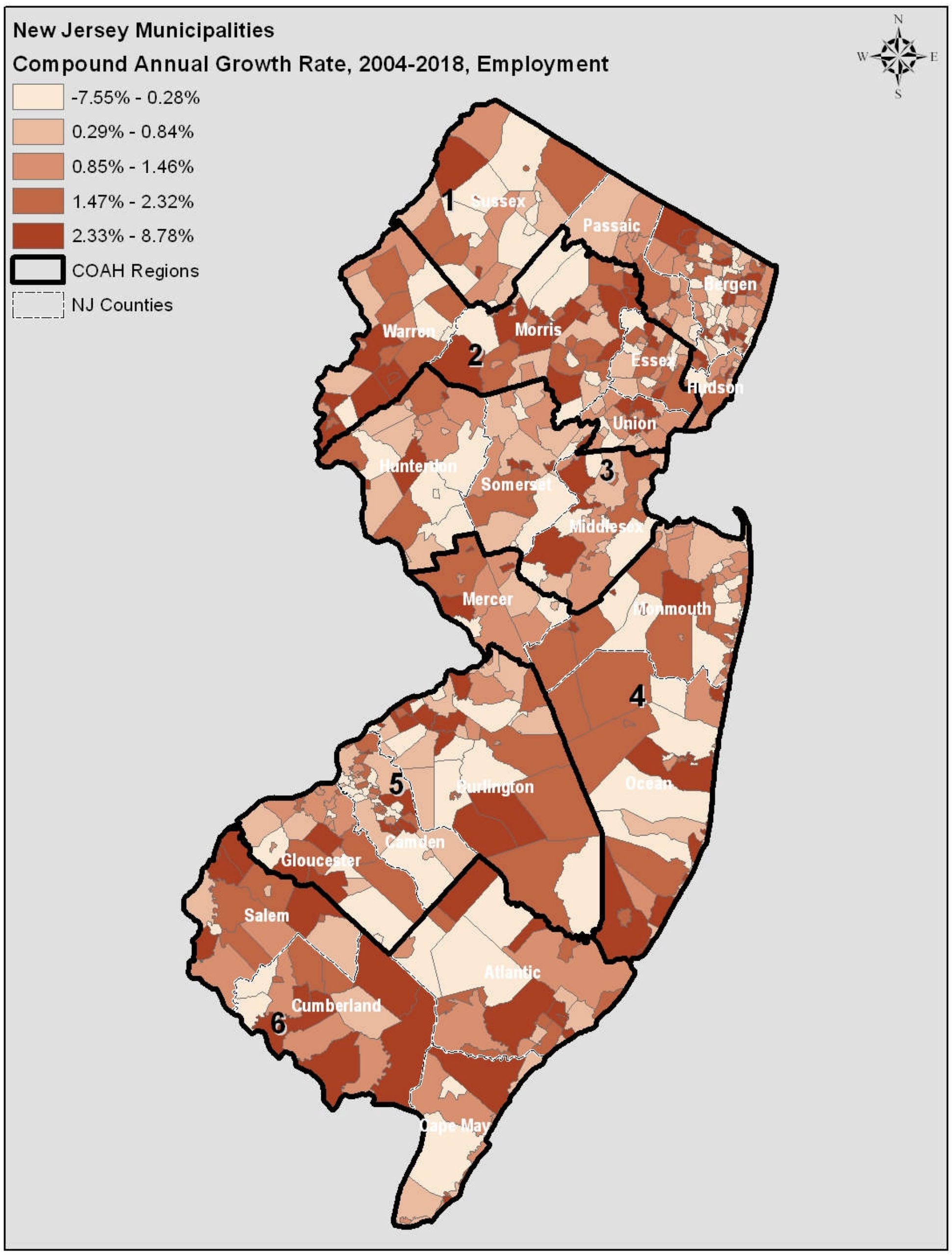
Figure 4.2 - Employment by County: 2002, 2004 and 2018

County	Employment in 2002	Employment in 2004	Employment Allocated 2018	Net Changes 2004 – 2018	Annual Rate of Change 2004 to 2018
ATLANTIC	142,852	143,225	167,237	24,012	1.11%
BERGEN	443,731	442,609	512,976	70,367	1.06%
BURLINGTON	187,445	194,415	244,948	50,533	1.66%
CAMDEN	198,888	203,132	245,538	42,406	1.36%
CAPE MAY	44,463	47,516	48,496	981	0.15%
CUMBERLAND	56,497	57,653	64,972	7,319	0.86%
ESSEX	334,564	333,223	392,523	59,300	1.18%
GLOUCESTER	92,735	97,790	124,348	26,558	1.73%
HUDSON	230,705	230,613	288,670	58,057	1.62%
HUNTERDON	44,009	46,938	58,136	11,199	1.54%
MERCER	170,956	176,631	224,055	47,425	1.71%
MIDDLESEX	371,633	373,245	439,204	65,959	1.17%
MONMOUTH	241,739	250,996	315,332	64,336	1.64%
MORRIS	273,223	278,825	353,789	74,964	1.72%
OCEAN	141,207	147,400	187,332	39,932	1.73%
PASSAIC	170,101	171,149	208,168	37,019	1.41%
SALEM	22,237	22,815	25,920	3,106	0.92%
SOMERSET	163,543	164,559	202,685	38,126	1.50%
SUSSEX	37,626	41,328	54,110	12,783	1.94%
UNION	235,685	228,552	275,710	47,159	1.35%
WARREN	36,177	37,076	46,005	8,928	1.55%
NEW JERSEY	3,640,016	3,689,688	4,480,153	790,465	1.40%

Source: Econsult Corporation

The full allocation result by municipality can be found in Exhibit B. The employment growth between 2004 and 2018 is also illustrated in a map showing municipal rates (see Figure 4.3).

Figure 4.3 - Employment Growth Rates by Municipality, 2004 to 2018



Source: Econsult Corporation (2007)

5.0 STATE GOVERNMENT EMPLOYMENT

The employment allocation model does not cover this sector because of data deficiency at the municipal level. However, to complete the employment picture, some discussion on the state government sector is deserved.

First, from a policy perspective, the growth of state government employment is usually not the prerogative of local government. The planning and development of state facilities is initiated by the state government. As such, the housing obligations resulted from the growth of state government employment should be better born by the state government.

Second, the state government sector only accounts for about 3.5 percent of the total employment in New Jersey. For majority of the municipalities, this sector has little housing impact. However, due to the highly uneven geographical distribution of state government jobs, few municipalities, such as Trenton, have a fairly high share of jobs in this sector. Over the past decade, over one of six jobs in Mercer County belonged to the state government. The available data, however, are not sufficient to identify the distraction with the county.

The NJLWD reported the state government sector at the county level for selected years (1993 through 2004 and 2014) and the estimates are in the nearest 50 jobs. In 2002, the state government hired about 128,250 employees and over 60 percent of these jobs were in Mercer County, Essex County and Middlesex County. In 2004, the state government sector is estimated to be of 148,050 employees and those three counties continued to dominate 61 percent.

Based on the growth between 2002 and 2014, we extrapolate the county by county state government employment. It is projected that by 2018, the state government sector will grow to 171,160 at a rate slightly higher than other sectors. Consequently, the share of state government sector in all employment will marginally rise to 4 percent. The net increase is about 23,110 in this 14 year period, or about 1,650 per annum for the whole state. Of course future growth of state employment is affected by many factors including the fiscal health of the state, so the projection could be speculative.

Figures 5.1 and 5.2 present the change of state government employment between 2002 and 2018:

Figure 5.1 - State Government Employment by COAH Region: 2002, 2004 and 2018

COAH region	Employment in 2002	Employment in 2004	Employment in 2018	Net Changes 2004-2018
1 – Northeast	13,650	15,450	17,300	1,850
2 – Northwest	27,900	32,550	38,300	5,750
3 – West Central	21,700	28,600	35,450	6,850
4 – East Central	42,000	44,800	51,160	6,360
5 – Southwest	12,250	14,550	16,100	1,550
6 – South-Southwest	10,750	12,100	12,850	750
New Jersey	128,250	148,050	171,160	23,110

Source: Econsult Corporation (2007)

Figure 5.2 - State Government Employment by County: 2002, 2004 and 2018

County	Employment in 2002	Employment in 2004	Employment in 2018	Net Changes 2004-2018
Atlantic	3,400	4,250	4,900	650
Bergen	5,350	5,200	5,300	100
Burlington	3,750	4,250	4,300	50
Camden	6,000	7,150	8,000	850
Cape May	1,850	1,950	2,000	50
Cumberland	4,900	5,250	5,250	0
Essex	21,600	25,700	30,600	4,900
Gloucester	2,500	3,150	3,800	650
Hudson	2,550	3,800	4,600	800
Hunterdon	2,800	3,250	3,400	150
Mercer	37,950	40,350	46,650	6,300
Middlesex	17,900	24,350	31,050	6,700
Monmouth	3,150	3,350	3,410	60
Morris	2,400	2,800	3,200	400
Ocean	900	1,100	1,100	0
Passaic	5,350	6,050	7,000	950
Salem	600	650	700	50
Somerset	1,000	1,000	1,000	0
Sussex	400	400	400	0
Union	3,400	3,550	4,000	450
Warren	500	500	500	0
New Jersey	128,250	148,050	171,160	23,110

Source: Econsult Corporation (2007)

EXHIBIT A - MUNICIPAL GROWTH RATES IN THE HOUSING ALLOCATION MODEL

Housing growth of a municipality should slow down as the municipality's physical growth capacity is being reached. In other words, a municipality is unlikely to sustain its historical growth rates as measured between the 1993 and 2002 period in the following 16 years if it has already approached a high build-out level.

To capture this relationship between the anticipated housing growth rate between 2002 and 2018 and the 2002 build-out level, a regression model was developed to empirically estimate the implied historical growth rates that measure how build-out levels affect future growth rates. In this model, the dependent variable is the housing growth rate (a linear annual growth rate) between 1993 and 2006 for each of the 566 municipalities. The independent variable is the 1993 build-out level and was estimated by dividing the number of housing units in 1993 with the sum of the 2006 housing units and the number of potential housing units that could be built after 2002. This equation applies to municipalities that had a positive growth between 1993 and 2006. However, for a few declining communities, this equation may end up a build-out ratio over 100 percent when the amount of housing units lost between 1993 and 2006 is larger than the post-2002 growth capacity. In this case, the build-out level is estimated by changing the denominator in this equation to the sum of the 1993 housing units and the number of potential housing units that could be built after 2002.

This regression model had 566 observations initially but outliers with historical growth rates above the 99 percentile or below the 1 percentile in the sample were excluded in the model. Since municipalities within the same COAH Region may behave differently as a group from others in a different COAH Region, the slope and the y-intercept of the implied rates would also differ by COAH region. Two sets of dummy variables are introduced in the model. The first set of 5 dummy variables captures the effects of the COAH region, i.e. it will change the y-intercept or the initial historical rate when the build-out level is 0. The second set of dummy variables measure the interaction effects of COAH region on the slope of the curve.

The functional form of the model is in cubic form (a declining curve with two turns). The goodness of fit of a regression model is usually measured by coefficient of determination (adjusted R Square that explains the percent of variations in the data). The Task 1 regression model of implied historical growth rate of housing units has a coefficient of determination of 0.4778, a strong result for cross-sectional regression models.

Figure A.1 - Housing Unit by Municipality: 2002, 2004 and 2018

Municipality	COAH Region	County	Units in 2002	Units in 2004	2018 Units Based On Historic Growth	2018 Units Based On "S" Curve	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
ABSECON CITY	6	ATLANTIC	3,013	3,097	3,549	3,323	3,525	428	1.1%
ATLANTIC CITY	6	ATLANTIC	20,205	20,161	19,961	20,454	20,321	160	0.1%
BRIGANTINE CITY	6	ATLANTIC	9,388	9,261	9,368	9,270	9,388	127	0.1%
BUENA BOROUGH	6	ATLANTIC	1,576	1,596	1,613	1,697	1,676	80	0.4%
BUENA VISTA TOWNSHIP	6	ATLANTIC	2,869	2,894	3,089	3,086	3,171	277	0.8%
CORBIN CITY	6	ATLANTIC	213	215	225	223	235	20	0.7%
EGG HARBOR TOWNSHIP	6	ATLANTIC	12,898	13,720	18,516	15,494	17,417	3,697	2.0%
EGG HARBOR CITY	6	ATLANTIC	1,772	1,785	1,829	1,830	1,902	117	0.5%
ESTELL MANOR CITY	6	ATLANTIC	570	585	682	632	675	90	1.2%
FOLSOM BOROUGH	6	ATLANTIC	713	711	742	728	769	58	0.7%
GALLOWAY TOWNSHIP	6	ATLANTIC	12,875	13,467	17,433	14,817	16,417	2,950	1.7%
HAMILTON TOWNSHIP	6	ATLANTIC	8,349	8,855	11,240	9,708	10,700	1,845	1.6%
HAMMONTON TOWN	6	ATLANTIC	5,142	5,350	6,191	5,901	6,083	733	1.1%
LINWOOD CITY	6	ATLANTIC	2,800	2,804	2,980	2,848	2,986	182	0.5%
LONGPORT BOROUGH	6	ATLANTIC	1,579	1,571	1,613	1,579	1,579	8	0.0%
MARGATE CITY	6	ATLANTIC	7,106	7,130	7,399	7,193	7,193	63	0.1%
MULLICA TOWNSHIP	6	ATLANTIC	2,221	2,258	2,463	2,371	2,503	245	0.9%
NORTHFIELD CITY	6	ATLANTIC	3,045	3,072	3,276	3,169	3,351	279	0.7%
PLEASANTVILLE CITY	6	ATLANTIC	7,116	7,178	7,275	7,414	7,591	413	0.5%
PORT REPUBLIC CITY	6	ATLANTIC	400	413	454	442	459	46	0.9%
SOMERS POINT CITY	6	ATLANTIC	5,425	5,513	5,553	5,536	5,631	118	0.2%
VENTNOR CITY	6	ATLANTIC	8,025	8,031	8,215	8,039	8,039	8	0.0%
WEYMOUTH TOWNSHIP	6	ATLANTIC	973	983	1,102	1,032	1,097	114	0.9%
ALLENDALE BOROUGH	1	BERGEN	2,200	2,200	2,377	2,264	2,468	268	1.0%
ALPINE BOROUGH	1	BERGEN	746	752	928	900	1,218	466	4.1%
BERGENFIELD BOROUGH	1	BERGEN	9,158	9,141	9,155	9,179	9,345	204	0.2%
BOGOTA BOROUGH	1	BERGEN	2,916	2,920	2,954	2,929	2,981	61	0.2%
CARLSTADT BOROUGH	1	BERGEN	2,463	2,457	2,450	2,448	2,469	12	0.0%
CLIFFSIDE PARK BOROUGH	1	BERGEN	10,373	10,361	10,599	10,433	10,507	146	0.1%

Municipality	COAH Region	County	Units in 2002	Units in 2004	2018 Units Based On Historic Growth	2018 Units Based On "S" Curve	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
CLOSTER BOROUGH	1	BERGEN	2,863	2,850	2,929	2,894	3,000	150	0.4%
CRESSKILL BOROUGH	1	BERGEN	2,719	2,731	2,920	2,826	2,895	164	0.5%
DEMAREST BOROUGH	1	BERGEN	1,631	1,615	1,647	1,665	1,808	193	0.9%
DUMONT BOROUGH	1	BERGEN	6,478	6,468	6,508	6,467	6,556	88	0.1%
EAST RUTHERFORD BOROUGH	1	BERGEN	3,774	3,778	3,923	3,882	3,888	110	0.2%
EDGEWATER BOROUGH	1	BERGEN	5,310	5,414	8,062	5,557	6,010	596	0.9%
ELMWOOD PARK BOROUGH	1	BERGEN	7,233	7,232	7,353	7,322	7,679	447	0.5%
EMERSON BOROUGH	1	BERGEN	2,413	2,409	2,557	2,535	2,815	406	1.3%
ENGLEWOOD CITY	1	BERGEN	9,648	9,643	10,160	9,977	10,180	537	0.5%
ENGLEWOOD CLIFFS BOROUGH	1	BERGEN	1,900	1,899	1,940	1,948	2,123	224	0.9%
FAIR LAWN BOROUGH	1	BERGEN	12,094	12,091	12,242	12,145	12,471	380	0.3%
FAIRVIEW BOROUGH	1	BERGEN	5,039	5,054	5,088	5,117	5,187	133	0.2%
FORT LEE BOROUGH	1	BERGEN	18,104	18,115	18,752	18,388	19,383	1,268	0.6%
FRANKLIN LAKES BOROUGH	1	BERGEN	3,454	3,578	3,867	3,773	4,278	700	1.5%
GARFIELD CITY	1	BERGEN	11,722	11,727	11,841	11,787	11,938	211	0.1%
GLEN ROCK BOROUGH	1	BERGEN	4,077	4,082	4,138	4,104	4,205	123	0.2%
HACKENSACK CITY	1	BERGEN	18,892	18,875	19,194	18,987	19,420	545	0.2%
HARRINGTON PARK BOROUGH	1	BERGEN	1,584	1,598	1,654	1,645	1,777	179	0.9%
HASBROUCK HEIGHTS BOROUGH	1	BERGEN	4,654	4,664	4,735	4,686	4,779	115	0.2%
HAWORTH BOROUGH	1	BERGEN	1,150	1,149	1,171	1,202	1,360	211	1.4%
HILLSDALE BOROUGH	1	BERGEN	3,552	3,552	3,634	3,595	3,747	195	0.4%
HO-HO-KUS BOROUGH	1	BERGEN	1,473	1,469	1,487	1,496	1,603	134	0.7%
LEONIA BOROUGH	1	BERGEN	3,154	3,163	3,118	3,225	3,266	103	0.3%
LITTLE FERRY BOROUGH	1	BERGEN	4,456	4,458	4,466	4,488	4,587	129	0.2%
LODI BOROUGH	1	BERGEN	9,984	10,025	10,267	10,095	10,339	314	0.3%
LYNDHURST TOWNSHIP	1	BERGEN	8,112	8,114	8,250	8,134	8,157	43	0.0%
MAHWAH TOWNSHIP	1	BERGEN	9,847	9,917	11,042	10,252	11,179	1,262	1.0%
MAYWOOD BOROUGH	1	BERGEN	3,772	3,770	3,772	3,793	3,892	122	0.3%
MIDLAND PARK BOROUGH	1	BERGEN	2,654	2,820	2,932	2,822	2,822	2	0.0%
MONTVALE BOROUGH	1	BERGEN	2,697	2,716	2,936	2,894	3,326	610	1.7%

Municipality	COAH Region	County	Units in 2002	Units in 2004	2018 Units Based On Historic Growth	2018 Units Based On "S" Curve	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
MOONACHIE BOROUGH	1	BERGEN	1,079	1,084	1,085	1,090	1,095	11	0.1%
NEW MILFORD BOROUGH	1	BERGEN	6,443	6,444	6,489	6,469	6,572	128	0.2%
NORTH ARLINGTON BOROUGH	1	BERGEN	6,527	6,549	6,594	6,569	6,643	94	0.1%
NORTHVALE BOROUGH	1	BERGEN	1,613	1,615	1,643	1,618	1,631	16	0.1%
NORWOOD BOROUGH	1	BERGEN	1,902	2,003	2,188	2,013	2,067	64	0.3%
OAKLAND BOROUGH	1	BERGEN	4,503	4,532	4,808	4,623	4,963	431	0.8%
OLD TAPPAN BOROUGH	1	BERGEN	1,827	1,809	2,168	1,920	2,165	356	1.5%
ORADELL BOROUGH	1	BERGEN	2,836	2,834	2,864	2,894	3,103	269	0.8%
PALISADES PARK BOROUGH	1	BERGEN	6,577	6,689	7,251	6,855	6,855	166	0.2%
PARAMUS BOROUGH	1	BERGEN	8,503	8,493	8,910	8,667	9,266	773	0.7%
PARK RIDGE BOROUGH	1	BERGEN	3,312	3,314	3,451	3,344	3,444	130	0.3%
RAMSEY BOROUGH	1	BERGEN	5,442	5,471	5,759	5,607	6,039	568	0.8%
RIDGEFIELD BOROUGH	1	BERGEN	4,157	4,148	4,161	4,166	4,254	106	0.2%
RIDGEFIELD PARK VILLAGE	1	BERGEN	5,134	5,133	5,237	5,274	5,612	479	0.7%
RIDGEWOOD VILLAGE	1	BERGEN	8,800	8,801	8,860	8,840	9,070	269	0.3%
RIVER EDGE BOROUGH	1	BERGEN	4,216	4,216	4,256	4,235	4,318	102	0.2%
RIVER VALE TOWNSHIP	1	BERGEN	3,354	3,344	3,413	3,390	3,586	242	0.6%
ROCHELLE PARK TOWNSHIP	1	BERGEN	2,117	2,120	2,142	2,135	2,186	66	0.3%
ROCKLEIGH BOROUGH	1	BERGEN	80	80	94	98	149	69	5.3%
RUTHERFORD BOROUGH	1	BERGEN	7,204	7,205	7,240	7,237	7,424	219	0.2%
SADDLE BROOK TOWNSHIP	1	BERGEN	5,178	5,201	5,412	5,296	5,365	164	0.3%
SADDLE RIVER BOROUGH	1	BERGEN	1,210	1,276	1,424	1,407	1,761	485	2.7%
SOUTH HACKENSACK TOWNSHIP	1	BERGEN	833	831	857	838	851	20	0.2%
TEANECK TOWNSHIP	1	BERGEN	13,715	13,884	14,227	14,021	14,363	479	0.3%
TENAFLY BOROUGH	1	BERGEN	4,899	4,929	4,977	4,984	5,170	241	0.4%
TETERBORO BOROUGH	1	BERGEN	8	8	6	10	8	0	0.0%
UPPER SADDLE RIVER BOROUGH	1	BERGEN	2,618	2,675	2,767	2,706	2,910	235	0.7%
WALDWICK BOROUGH	1	BERGEN	3,493	3,503	3,609	3,568	3,726	223	0.5%
WALLINGTON BOROUGH	1	BERGEN	4,927	4,924	4,952	4,970	5,172	248	0.4%

Municipality	COAH Region	County	Units in 2002	Units in 2004	2018 Units Based On Historic Growth	2018 Units Based On "S" Curve	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
WASHINGTON TOWNSHIP	1	BERGEN	3,328	3,357	3,467	3,423	3,645	288	0.7%
WESTWOOD BOROUGH	1	BERGEN	4,625	4,629	4,725	4,646	4,723	94	0.2%
WOODCLIFF LAKE BOROUGH	1	BERGEN	1,855	1,860	2,108	2,013	2,343	483	1.9%
WOOD-RIDGE BOROUGH	1	BERGEN	3,094	3,093	3,149	3,146	3,342	249	0.6%
WYCKOFF TOWNSHIP	1	BERGEN	5,748	5,761	6,041	5,911	6,400	639	0.9%
BASS RIVER TOWNSHIP	5	BURLINGTON	600	597	617	666	639	42	0.6%
BEVERLY CITY	5	BURLINGTON	1,040	1,042	1,044	1,070	1,089	47	0.4%
BORDENTOWN CITY	5	BURLINGTON	1,906	1,937	1,968	1,999	2,022	85	0.4%
BORDENTOWN TOWNSHIP	5	BURLINGTON	3,825	4,042	5,166	4,465	4,783	741	1.4%
BURLINGTON CITY	5	BURLINGTON	4,202	4,238	4,385	4,423	4,487	249	0.5%
BURLINGTON TOWNSHIP	5	BURLINGTON	7,974	8,106	10,766	8,762	9,729	1,623	1.5%
CHESTERFIELD TOWNSHIP	5	BURLINGTON	957	972	1,515	1,495	1,312	340	2.5%
CINNAMINSON TOWNSHIP	5	BURLINGTON	5,269	5,346	5,881	5,696	5,843	497	0.7%
DELANCO TOWNSHIP	5	BURLINGTON	1,337	1,519	2,148	1,811	1,859	340	1.7%
DELRAN TOWNSHIP	5	BURLINGTON	6,224	6,651	8,173	6,981	7,572	921	1.1%
EASTAMPTON TOWNSHIP	5	BURLINGTON	2,420	2,422	2,584	2,598	2,633	211	0.7%
EDGEWATER PARK TOWNSHIP	5	BURLINGTON	3,374	3,423	3,605	3,656	3,630	207	0.5%
EVESHAM TOWNSHIP	5	BURLINGTON	17,590	18,280	21,492	18,894	20,105	1,825	0.8%
FIELDSBORO BOROUGH	5	BURLINGTON	204	204	234	211	235	31	1.2%
FLORENCE TOWNSHIP	5	BURLINGTON	4,555	4,594	5,392	5,327	5,238	644	1.1%
HAINESPORT TOWNSHIP	5	BURLINGTON	2,044	2,286	3,217	2,432	2,744	458	1.5%
LUMBERTON TOWNSHIP	5	BURLINGTON	4,677	4,845	6,609	5,262	5,884	1,039	1.6%
MANSFIELD TOWNSHIP	5	BURLINGTON	3,161	3,460	6,367	3,803	4,737	1,277	2.7%
MAPLE SHADE TOWNSHIP	5	BURLINGTON	9,003	9,143	9,277	9,324	9,561	418	0.4%
MEDFORD TOWNSHIP	5	BURLINGTON	8,530	8,652	9,636	9,111	9,504	852	0.8%
MEDFORD LAKES BOROUGH	5	BURLINGTON	1,558	1,559	1,563	1,568	1,572	13	0.1%
MOORESTOWN TOWNSHIP	5	BURLINGTON	7,539	7,624	8,746	8,078	8,526	902	0.9%
MOUNT HOLLY TOWNSHIP	5	BURLINGTON	4,241	4,221	4,461	4,348	4,550	329	0.6%
MOUNT LAUREL TOWNSHIP	5	BURLINGTON	17,929	18,000	21,160	19,059	20,266	2,266	1.0%
NEW HANOVER TOWNSHIP	5	BURLINGTON	1,385	1,395	1,671	1,421	1,454	59	0.3%

Municipality	COAH Region	County	Units in 2002	Units in 2004	2018 Units Based On Historic Growth	2018 Units Based On "S" Curve	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
NORTH HANOVER TOWNSHIP	5	BURLINGTON	2,712	2,727	2,659	2,914	2,789	62	0.2%
PALMYRA BOROUGH	5	BURLINGTON	3,370	3,367	3,554	3,492	3,655	288	0.7%
PEMBERTON BOROUGH	5	BURLINGTON	514	550	585	579	582	32	0.5%
PEMBERTON TOWNSHIP	5	BURLINGTON	10,843	10,861	11,273	11,299	11,532	671	0.5%
RIVERSIDE TOWNSHIP	5	BURLINGTON	3,123	3,146	3,161	3,191	3,230	84	0.2%
RIVERTON BOROUGH	5	BURLINGTON	1,115	1,116	1,137	1,133	1,167	51	0.4%
SHAMONG TOWNSHIP	5	BURLINGTON	2,237	2,268	2,535	2,349	2,477	209	0.7%
SOUTHAMPTON TOWNSHIP	5	BURLINGTON	4,928	4,973	5,373	5,216	5,389	416	0.7%
SPRINGFIELD TOWNSHIP	5	BURLINGTON	1,206	1,207	1,359	1,400	1,346	139	0.9%
TABERNACLE TOWNSHIP	5	BURLINGTON	2,424	2,452	2,610	2,627	2,633	181	0.6%
WASHINGTON TOWNSHIP	5	BURLINGTON	171	172	149	196	166	-6	-0.3%
WESTAMPTON TOWNSHIP	5	BURLINGTON	2,820	3,042	4,129	3,685	3,625	583	1.5%
WILLINGBORO TOWNSHIP	5	BURLINGTON	11,118	11,118	11,425	11,555	11,773	655	0.5%
WOODLAND TOWNSHIP	5	BURLINGTON	479	484	545	507	551	67	1.1%
WRIGHTSTOWN BOROUGH	5	BURLINGTON	340	339	345	667	356	17	0.4%
AUDUBON BOROUGH	5	CAMDEN	3,815	3,816	3,807	3,847	3,838	22	0.0%
AUDUBON PARK BOROUGH	5	CAMDEN	499	499	506	515	516	17	0.3%
BARRINGTON BOROUGH	5	CAMDEN	3,173	3,178	3,395	3,279	3,418	240	0.6%
BELLMAWR BOROUGH	5	CAMDEN	4,573	4,569	4,566	4,761	4,668	99	0.2%
BERLIN BOROUGH	5	CAMDEN	2,515	2,609	3,173	2,849	3,081	472	1.4%
BERLIN TOWNSHIP	5	CAMDEN	2,027	2,041	2,178	2,153	2,193	152	0.6%
BROOKLAWN BOROUGH	5	CAMDEN	1,025	1,025	1,146	1,029	1,035	10	0.1%
CAMDEN CITY	5	CAMDEN	28,720	29,071	28,858	29,996	29,695	624	0.2%
CHERRY HILL TOWNSHIP	5	CAMDEN	27,369	27,682	28,916	28,520	29,204	1,522	0.4%
CHESILHURST BOROUGH	5	CAMDEN	541	596	697	698	684	88	1.2%
CLEMENTON BOROUGH	5	CAMDEN	2,206	2,215	2,188	2,314	2,241	26	0.1%
COLLINGSWOOD BOROUGH	5	CAMDEN	6,838	6,837	6,864	6,882	6,952	115	0.1%
GIBBSBORO BOROUGH	5	CAMDEN	848	848	935	942	938	90	0.8%
GLOUCESTER TOWNSHIP	5	CAMDEN	24,902	25,255	28,326	26,879	28,127	2,872	0.9%
GLOUCESTER CITY	5	CAMDEN	4,576	4,670	4,551	4,764	4,663	-7	0.0%

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HADDON TOWNSHIP	5	CAMDEN	6,421	6,427	6,494	6,481	6,551	124	0.2%
HADDONFIELD BOROUGH	5	CAMDEN	4,638	4,662	4,761	4,707	4,737	75	0.1%
HADDON HEIGHTS BOROUGH	5	CAMDEN	3,139	3,144	3,167	3,194	3,230	86	0.2%
HI-NELLA BOROUGH	5	CAMDEN	495	495	504	517	513	18	0.3%
LAUREL SPRINGS BOROUGH	5	CAMDEN	808	808	797	830	817	9	0.1%
LAWNSIDE BOROUGH	5	CAMDEN	1,103	1,136	1,252	1,262	1,250	114	0.8%
LINDENWOLD BOROUGH	5	CAMDEN	8,230	8,233	8,253	8,530	8,438	205	0.2%
MAGNOLIA BOROUGH	5	CAMDEN	1,839	1,838	1,841	1,893	1,883	45	0.2%
MERCHANTVILLE BOROUGH	5	CAMDEN	1,607	1,607	1,605	1,612	1,609	2	0.0%
MOUNT EPHRAIM BOROUGH	5	CAMDEN	1,876	1,963	1,989	1,956	1,956	-7	0.0%
OAKLYN BOROUGH	5	CAMDEN	1,894	1,894	1,900	1,899	1,905	11	0.0%
PENNSAUKEN TOWNSHIP	5	CAMDEN	12,997	13,007	13,321	13,379	13,546	539	0.3%
PINE HILL BOROUGH	5	CAMDEN	4,546	4,631	5,137	4,906	5,098	467	0.8%
PINE VALLEY BOROUGH	5	CAMDEN	24	22	166	176	92	70	12.7%
RUNNEMEDE BOROUGH	5	CAMDEN	3,525	3,539	3,614	3,635	3,674	135	0.3%
SOMERDALE BOROUGH	5	CAMDEN	2,172	2,172	2,198	2,247	2,242	70	0.3%
STRATFORD BOROUGH	5	CAMDEN	2,847	2,845	2,847	2,900	2,911	66	0.2%
TAVISTOCK BOROUGH	5	CAMDEN	7	7	15	23	12	5	4.6%
VOORHEES TOWNSHIP	5	CAMDEN	11,336	11,501	12,833	12,174	12,757	1,256	0.9%
WATERFORD TOWNSHIP	5	CAMDEN	3,722	3,759	4,018	3,976	4,043	284	0.6%
WINSLOW TOWNSHIP	5	CAMDEN	12,600	13,375	16,537	15,327	15,954	2,579	1.5%
WOODLYNNE BOROUGH	5	CAMDEN	1,012	1,012	1,014	1,012	1,012	0	0.0%
AVALON BOROUGH	6	CAPE MAY	5,261	5,249	5,184	5,267	5,239	-10	0.0%
CAPE MAY CITY	6	CAPE MAY	4,092	4,129	4,274	4,145	4,145	16	0.0%
CAPE MAY POINT BOROUGH	6	CAPE MAY	521	528	507	534	526	-2	0.0%
DENNIS TOWNSHIP	6	CAPE MAY	2,383	2,418	2,673	2,566	2,438	20	0.1%
LOWER TOWNSHIP	6	CAPE MAY	14,227	14,357	15,083	14,552	14,445	88	0.1%
MIDDLE TOWNSHIP	6	CAPE MAY	8,025	8,409	9,700	9,015	8,769	360	0.3%
NORTH WILDWOOD CITY	6	CAPE MAY	7,667	7,752	8,159	7,865	7,865	113	0.1%
OCEAN CITY	6	CAPE MAY	20,547	20,558	21,579	20,816	20,816	258	0.1%

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SEA ISLE CITY	6	CAPE MAY	6,919	7,002	7,669	7,167	7,167	165	0.2%
STONE HARBOR BOROUGH	6	CAPE MAY	3,421	3,403	3,466	3,402	3,402	-1	0.0%
UPPER TOWNSHIP	6	CAPE MAY	5,606	5,761	6,188	6,146	5,870	109	0.2%
WEST CAPE MAY BOROUGH	6	CAPE MAY	1,033	1,037	1,089	1,041	1,034	-3	0.0%
WEST WILDWOOD BOROUGH	6	CAPE MAY	791	783	797	797	797	14	0.1%
WILDWOOD CITY	6	CAPE MAY	6,547	6,719	7,263	6,956	6,956	237	0.3%
WILDWOOD CREST BOROUGH	6	CAPE MAY	4,957	5,027	5,259	5,106	5,106	79	0.1%
WOODBINE BOROUGH	6	CAPE MAY	1,088	1,102	1,210	1,161	1,107	5	0.0%
BRIDGETON CITY	6	CUMBERLAND	6,735	6,700	6,930	7,167	7,053	353	0.4%
COMMERCIAL TOWNSHIP	6	CUMBERLAND	2,179	2,175	2,273	2,336	2,301	126	0.5%
DEERFIELD TOWNSHIP	6	CUMBERLAND	1,094	1,106	1,279	1,291	1,251	145	1.0%
DOWNE TOWNSHIP	6	CUMBERLAND	1,135	1,133	1,163	1,206	1,184	51	0.4%
FAIRFIELD TOWNSHIP	6	CUMBERLAND	1,925	1,939	1,965	2,161	2,022	83	0.3%
GREENWICH TOWNSHIP	6	CUMBERLAND	361	362	389	399	390	28	0.6%
HOPEWELL TOWNSHIP	6	CUMBERLAND	1,735	1,755	2,012	1,988	1,968	213	1.0%
LAWRENCE TOWNSHIP	6	CUMBERLAND	1,034	1,039	1,181	1,204	1,162	123	0.9%
MAURICE RIVER TOWNSHIP	6	CUMBERLAND	1,477	1,486	1,593	1,628	1,631	145	0.8%
MILLVILLE CITY	6	CUMBERLAND	10,723	10,861	11,980	12,342	11,876	1,015	0.7%
SHILOH BOROUGH	6	CUMBERLAND	205	207	218	229	223	16	0.6%
STOW CREEK TOWNSHIP	6	CUMBERLAND	574	582	650	652	641	59	0.8%
UPPER DEERFIELD TOWNSHIP	6	CUMBERLAND	2,918	2,929	3,294	3,337	3,251	322	0.9%
VINELAND CITY	6	CUMBERLAND	21,445	21,880	24,209	24,222	23,796	1,916	0.7%
BELLEVILLE TOWNSHIP	2	ESSEX	14,153	14,161	14,366	14,418	14,472	311	0.2%
BLOOMFIELD TOWNSHIP	2	ESSEX	19,512	19,506	19,816	19,922	19,947	441	0.2%
CALDWELL BOROUGH	2	ESSEX	3,499	3,528	3,694	3,637	3,640	112	0.3%
CEDAR GROVE TOWNSHIP	2	ESSEX	4,514	4,667	5,245	5,216	5,010	343	0.6%
CITY OF ORANGE TOWNSHIP	2	ESSEX	12,548	12,458	12,699	12,710	12,854	396	0.3%
EAST ORANGE CITY	2	ESSEX	28,257	27,872	27,792	28,756	28,442	570	0.2%
ESSEX FELLS BOROUGH	2	ESSEX	765	770	831	881	814	44	0.5%
FAIRFIELD TOWNSHIP	2	ESSEX	2,429	2,480	2,659	2,561	2,614	134	0.4%

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GLEN RIDGE BOROUGH	2	ESSEX	2,489	2,488	2,617	2,568	2,568	80	0.3%
IRVINGTON TOWNSHIP	2	ESSEX	24,065	24,000	24,007	24,309	24,365	365	0.1%
LIVINGSTON TOWNSHIP	2	ESSEX	9,602	9,729	10,666	10,340	10,378	649	0.5%
MAPLEWOOD TOWNSHIP	2	ESSEX	8,650	8,664	8,934	8,784	8,905	241	0.2%
MILLBURN TOWNSHIP	2	ESSEX	7,152	7,121	7,223	7,387	7,302	181	0.2%
MONTCLAIR TOWNSHIP	2	ESSEX	15,611	15,672	16,027	15,913	16,024	352	0.2%
NEWARK CITY	2	ESSEX	101,356	103,596	109,068	108,111	107,624	4,028	0.3%
NORTH CALDWELL BOROUGH	2	ESSEX	2,104	2,104	2,226	2,329	2,214	110	0.4%
NUTLEY TOWNSHIP	2	ESSEX	11,507	11,560	11,886	11,702	11,879	319	0.2%
ROSELAND BOROUGH	2	ESSEX	2,211	2,313	2,820	2,561	2,597	284	1.0%
SOUTH ORANGE VILLAGE TOWNSHIP	2	ESSEX	5,929	5,935	6,219	6,082	6,093	158	0.2%
VERONA TOWNSHIP	2	ESSEX	5,719	5,714	5,840	5,985	5,871	157	0.2%
WEST CALDWELL TOWNSHIP	2	ESSEX	4,057	4,059	4,757	4,474	4,538	479	0.9%
WEST ORANGE TOWNSHIP	2	ESSEX	17,224	17,263	18,532	19,028	18,197	934	0.4%
CLAYTON BOROUGH	5	GLOUCESTER	2,690	2,727	3,315	3,121	3142	415	1.2%
DEPTFORD TOWNSHIP	5	GLOUCESTER	11,113	11,738	14,612	13,168	13315	1,577	1.1%
EAST GREENWICH TOWNSHIP	5	GLOUCESTER	2,385	2,555	3,769	3,030	2977	422	1.3%
ELK TOWNSHIP	5	GLOUCESTER	1,372	1,404	1,943	2,460	1697	293	1.6%
FRANKLIN TOWNSHIP	5	GLOUCESTER	5,661	5,866	7,319	7,334	6725	859	1.1%
GLASSBORO BOROUGH	5	GLOUCESTER	6,580	6,625	7,303	7,106	7310	685	0.8%
GREENWICH TOWNSHIP	5	GLOUCESTER	1,952	1,953	2,025	2,023	2125	172	0.7%
HARRISON TOWNSHIP	5	GLOUCESTER	3,437	3,770	6,363	4,435	4813	1,043	2.1%
LOGAN TOWNSHIP	5	GLOUCESTER	2,082	2,127	2,608	2,655	2443	316	1.2%
MANTUA TOWNSHIP	5	GLOUCESTER	5,446	5,470	7,259	7,238	6603	1,133	1.6%
MONROE TOWNSHIP	5	GLOUCESTER	11,706	12,149	15,053	13,949	13728	1,579	1.0%
NATIONAL PARK BOROUGH	5	GLOUCESTER	1,167	1,184	1,220	1,225	1259	75	0.5%
NEWFIELD BOROUGH	5	GLOUCESTER	622	622	639	638	668	46	0.6%
PAULSBORO BOROUGH	5	GLOUCESTER	2,622	2,622	2,672	2,693	2800	178	0.5%
PITMAN BOROUGH	5	GLOUCESTER	3,659	3,658	3,774	3,781	3919	261	0.6%
SOUTH HARRISON TOWNSHIP	5	GLOUCESTER	929	965	1,380	1,133	1180	215	1.7%

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SWEDESBORO BOROUGH	5	GLOUCESTER	867	870	938	920	950	80	0.7%
WASHINGTON TOWNSHIP	5	GLOUCESTER	17,179	17,419	19,664	18,284	19190	1,771	0.8%
WENONAH BOROUGH	5	GLOUCESTER	863	868	900	906	928	60	0.6%
WEST DEPTFORD TOWNSHIP	5	GLOUCESTER	8,288	8,546	10,013	9,566	9541	995	0.9%
WESTVILLE BOROUGH	5	GLOUCESTER	1,938	1,937	1,945	1,999	2051	114	0.5%
WOODBURY CITY	5	GLOUCESTER	4,311	4,522	4,629	4,527	4527	5	0.0%
WOODBURY HEIGHTS BOROUGH	5	GLOUCESTER	1,055	1,065	1,087	1,109	1130	65	0.5%
WOOLWICH TOWNSHIP	5	GLOUCESTER	1,595	1,972	14,241	3,003	3003	1,031	3.6%
BAYONNE CITY	1	HUDSON	26,940	27,172	28,029	27,864	27,374	202	0.1%
EAST NEWARK BOROUGH	1	HUDSON	799	803	834	815	815	12	0.1%
GUTTENBERG TOWN	1	HUDSON	4,786	4,818	4,999	4,826	4,826	8	0.0%
HARRISON TOWN	1	HUDSON	5,249	5,284	5,631	5,494	5,453	169	0.3%
HOBOKEN CITY	1	HUDSON	19,912	19,931	21,535	20,585	20,585	654	0.3%
JERSEY CITY	1	HUDSON	94,612	95,821	100,485	97,945	97,164	1,343	0.1%
KEARNY TOWN	1	HUDSON	13,866	13,864	14,269	13,977	13,924	60	0.0%
NORTH BERGEN TOWNSHIP	1	HUDSON	22,146	22,144	22,794	22,482	22,187	43	0.0%
SECAUCUS TOWN	1	HUDSON	6,395	6,414	6,693	6,603	6,595	181	0.2%
UNION CITY	1	HUDSON	24,056	24,305	24,913	24,419	24,339	34	0.0%
WEEHAWKEN TOWNSHIP	1	HUDSON	6,159	6,166	6,428	6,343	6,177	11	0.0%
WEST NEW YORK TOWN	1	HUDSON	17,504	17,766	19,450	18,222	18,222	456	0.2%
ALEXANDRIA TOWNSHIP	3	HUNTERDON	1,674	1,709	2,102	1,987	2,003	294	1.3%
BETHLEHEM TOWNSHIP	3	HUNTERDON	1,373	1,388	1,635	1,480	1,582	194	1.1%
BLOOMSBURY BOROUGH	3	HUNTERDON	343	343	351	360	363	20	0.5%
CALIFON BOROUGH	3	HUNTERDON	411	412	422	428	436	24	0.5%
CLINTON TOWN	3	HUNTERDON	1,111	1,111	1,315	1,136	1,171	60	0.4%
CLINTON TOWNSHIP	3	HUNTERDON	4,593	4,767	5,836	5,272	5,489	722	1.2%
DELAWARE TOWNSHIP	3	HUNTERDON	1,766	1,798	2,069	2,225	2,025	227	1.0%
EAST AMWELL TOWNSHIP	3	HUNTERDON	1,649	1,660	1,893	2,020	1,873	213	1.0%
FLEMINGTON BOROUGH	3	HUNTERDON	1,877	1,877	1,891	1,936	1,970	93	0.4%
FRANKLIN TOWNSHIP	3	HUNTERDON	1,140	1,138	1,336	1,470	1,322	184	1.3%

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FRENCHTOWN BOROUGH	3	HUNTERDON	634	635	648	675	672	37	0.5%
GLEN GARDNER BOROUGH	3	HUNTERDON	830	830	846	842	861	31	0.3%
HAMPTON BOROUGH	3	HUNTERDON	580	579	577	646	604	25	0.4%
HIGH BRIDGE BOROUGH	3	HUNTERDON	1,476	1,478	1,496	1,514	1,557	79	0.4%
HOLLAND TOWNSHIP	3	HUNTERDON	1,978	2,022	2,234	2,247	2,226	204	0.8%
KINGWOOD TOWNSHIP	3	HUNTERDON	1,505	1,550	1,968	2,010	1,834	284	1.4%
LAMBERTVILLE CITY	3	HUNTERDON	1,965	1,965	2,282	2,172	2,217	252	1.0%
LEBANON BOROUGH	3	HUNTERDON	521	533	542	540	543	10	0.2%
LEBANON TOWNSHIP	3	HUNTERDON	2,126	2,178	2,312	2,289	2,331	153	0.6%
MILFORD BOROUGH	3	HUNTERDON	486	495	511	534	523	28	0.5%
RARITAN TOWNSHIP	3	HUNTERDON	7,752	8,130	10,164	9,459	9,490	1,360	1.3%
READINGTON TOWNSHIP	3	HUNTERDON	5,992	6,028	7,125	6,966	6,936	908	1.2%
STOCKTON BOROUGH	3	HUNTERDON	258	260	264	269	273	13	0.4%
TEWKSBURY TOWNSHIP	3	HUNTERDON	2,137	2,232	2,638	2,535	2,540	308	1.1%
UNION TOWNSHIP	3	HUNTERDON	1,789	1,811	2,085	1,943	2,045	234	1.0%
WEST AMWELL TOWNSHIP	3	HUNTERDON	1,078	1,143	1,503	1,456	1,378	235	1.6%
EAST WINDSOR TOWNSHIP	4	MERCER	10,574	10,863	12,700	11,963	12,012	1,149	0.8%
EWING TOWNSHIP	4	MERCER	12,997	13,212	14,005	14,416	13,915	703	0.4%
HAMILTON TOWNSHIP	4	MERCER	35,157	35,633	37,729	36,961	37,485	1,852	0.4%
HIGHTSTOWN BOROUGH	4	MERCER	2,127	2,129	2,170	2,189	2,193	64	0.2%
HOPEWELL BOROUGH	4	MERCER	860	860	883	889	885	25	0.2%
HOPEWELL TOWNSHIP	4	MERCER	5,792	6,085	8,852	7,586	7,559	1,474	1.8%
LAWRENCE TOWNSHIP	4	MERCER	11,866	12,301	14,543	13,173	13,622	1,321	0.9%
PENNINGTON BOROUGH	4	MERCER	1,318	1,319	1,587	1,342	1,387	68	0.4%
PRINCETON BOROUGH	4	MERCER	3,491	3,494	3,436	3,569	3,492	-2	0.0%
PRINCETON TOWNSHIP	4	MERCER	6,490	6,482	7,052	6,846	7,042	560	0.7%
TRENTON CITY	4	MERCER	33,687	33,546	33,608	33,897	34,467	921	0.2%
WASHINGTON TOWNSHIP	4	MERCER	4,591	4,854	7,230	5,701	6,019	1,165	1.8%
WEST WINDSOR TOWNSHIP	4	MERCER	8,105	8,435	11,698	9,880	10,285	1,850	1.7%
CARTERET BOROUGH	3	MIDDLESEX	7,539	7,561	8,108	7,881	8,096	535	0.6%

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CRANBURY TOWNSHIP	3	MIDDLESEX	1,172	1,312	1,731	1,575	1,536	224	1.3%
DUNELLEN BOROUGH	3	MIDDLESEX	2,501	2,525	2,536	2,524	2,524	-1	0.0%
EAST BRUNSWICK TOWNSHIP	3	MIDDLESEX	16,766	16,826	18,117	18,090	18,103	1,277	0.6%
EDISON TOWNSHIP	3	MIDDLESEX	36,247	36,280	38,818	38,396	38,853	2,573	0.6%
HELMETTA BOROUGH	3	MIDDLESEX	815	863	1,019	881	905	42	0.4%
HIGHLAND PARK BOROUGH	3	MIDDLESEX	6,133	6,135	6,343	6,455	6,409	274	0.4%
JAMESBURG BOROUGH	3	MIDDLESEX	2,286	2,285	2,336	2,343	2,398	113	0.4%
METUCHEN BOROUGH	3	MIDDLESEX	5,306	5,345	5,595	5,546	5,586	241	0.4%
MIDDLESEX BOROUGH	3	MIDDLESEX	5,117	5,115	5,219	5,229	5,327	212	0.3%
MILLTOWN BOROUGH	3	MIDDLESEX	2,675	2,676	2,756	2,755	2,804	128	0.4%
MONROE TOWNSHIP	3	MIDDLESEX	14,615	15,631	23,691	19,187	20,176	4,545	2.1%
NEW BRUNSWICK CITY	3	MIDDLESEX	13,678	14,189	14,734	14,992	14,783	594	0.3%
NORTH BRUNSWICK TOWNSHIP	3	MIDDLESEX	14,608	14,901	17,226	16,356	16,625	1,724	0.9%
OLD BRIDGE TOWNSHIP	3	MIDDLESEX	22,715	22,938	26,101	25,808	25,400	2,462	0.9%
PERTH AMBOY CITY	3	MIDDLESEX	15,480	15,484	16,023	16,354	16,161	677	0.4%
PISCATAWAY TOWNSHIP	3	MIDDLESEX	17,180	17,218	19,268	19,198	18,922	1,704	0.8%
PLAINSBORO TOWNSHIP	3	MIDDLESEX	9,386	9,454	11,268	10,810	10,787	1,333	1.1%
SAYREVILLE BOROUGH	3	MIDDLESEX	15,496	15,910	18,237	18,026	17,641	1,731	0.9%
SOUTH AMBOY CITY	3	MIDDLESEX	3,151	3,277	3,610	3,519	3,516	239	0.6%
SOUTH BRUNSWICK TOWNSHIP	3	MIDDLESEX	14,946	15,067	20,110	17,987	18,187	3,120	1.6%
SOUTH PLAINFIELD BOROUGH	3	MIDDLESEX	7,845	7,878	8,554	8,125	8,396	518	0.5%
SOUTH RIVER BOROUGH	3	MIDDLESEX	5,877	5,885	6,391	6,179	6,358	473	0.6%
SPOTSWOOD BOROUGH	3	MIDDLESEX	3,217	3,232	3,407	3,401	3,422	190	0.5%
WOODBRIDGE TOWNSHIP	3	MIDDLESEX	35,533	35,799	37,392	37,693	37,799	2,000	0.5%
ABERDEEN TOWNSHIP	4	MONMOUTH	6,586	6,941	7,463	7,100	7,186	245	0.3%
ALLENHURST BOROUGH	4	MONMOUTH	368	370	363	369	369	-1	0.0%
ALLENTOWN BOROUGH	4	MONMOUTH	718	720	759	731	757	37	0.4%
ASBURY PARK CITY	4	MONMOUTH	7,750	7,727	7,708	7,754	7,927	200	0.2%
ATLANTIC HIGHLANDS BOROUGH	4	MONMOUTH	2,056	2,055	2,107	2,094	2,136	81	0.3%

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AVON-BY-THE-SEA BOROUGH	4	MONMOUTH	1,397	1,367	1,331	1,347	1,386	19	0.1%
BELMAR BOROUGH	4	MONMOUTH	4,010	4,000	3,968	3,959	4,026	26	0.1%
BRADLEY BEACH BOROUGH	4	MONMOUTH	3,153	3,182	3,248	3,237	3,237	55	0.1%
BRIELLE BOROUGH	4	MONMOUTH	2,145	2,164	2,267	2,203	2,255	91	0.3%
COLTS NECK TOWNSHIP	4	MONMOUTH	3,768	3,791	4,660	4,225	4,070	279	0.6%
DEAL BOROUGH	4	MONMOUTH	944	948	944	962	968	20	0.2%
EATONTOWN BOROUGH	4	MONMOUTH	6,400	6,476	6,806	6,752	6,754	278	0.4%
ENGLISHTOWN BOROUGH	4	MONMOUTH	686	687	862	732	777	90	1.0%
FAIR HAVEN BOROUGH	4	MONMOUTH	2,046	2,048	2,039	2,042	2,061	13	0.1%
FARMINGDALE BOROUGH	4	MONMOUTH	639	640	645	644	652	12	0.2%
FREEHOLD BOROUGH	4	MONMOUTH	3,994	4,017	4,060	4,060	4,151	134	0.3%
FREEHOLD TOWNSHIP	4	MONMOUTH	11,805	11,885	14,084	13,463	13,105	1,220	0.8%
HAZLET TOWNSHIP	4	MONMOUTH	7,429	7,422	7,563	7,583	7,673	251	0.3%
HIGHLANDS BOROUGH	4	MONMOUTH	2,840	2,838	2,861	2,916	2,909	71	0.2%
HOLMDEL TOWNSHIP	4	MONMOUTH	5,623	5,774	7,635	6,062	6,551	777	1.1%
HOWELL TOWNSHIP	4	MONMOUTH	17,030	17,276	20,963	19,967	19,256	1,980	0.9%
INTERLAKEN BOROUGH	4	MONMOUTH	397	396	396	394	397	1	0.0%
KEANSBURG BOROUGH	4	MONMOUTH	4,244	4,237	4,236	4,245	4,255	18	0.0%
KEYPORT BOROUGH	4	MONMOUTH	3,411	3,423	3,449	3,443	3,518	95	0.2%
LITTLE SILVER BOROUGH	4	MONMOUTH	2,288	2,291	2,378	2,303	2,350	59	0.2%
LOCH ARBOUR VILLAGE	4	MONMOUTH	156	156	165	157	157	1	0.1%
LONG BRANCH CITY	4	MONMOUTH	14,218	14,552	15,589	15,106	15,145	593	0.3%
MANALAPAN TOWNSHIP	4	MONMOUTH	12,293	12,508	15,611	13,835	14,039	1,531	1.0%
MANASQUAN BOROUGH	4	MONMOUTH	3,531	3,534	3,648	3,561	3,561	27	0.1%
MARLBORO TOWNSHIP	4	MONMOUTH	12,924	13,270	17,274	14,450	15,074	1,804	1.1%
MATAWAN BOROUGH	4	MONMOUTH	3,721	3,724	3,767	3,773	3,810	86	0.2%
MIDDLETOWN TOWNSHIP	4	MONMOUTH	23,991	24,181	24,956	24,950	25,330	1,149	0.4%
MILLSTONE TOWNSHIP	4	MONMOUTH	3,019	3,120	4,245	3,706	3,608	488	1.2%
MONMOUTH BEACH BOROUGH	4	MONMOUTH	1,998	2,014	2,036	2,004	2,004	-10	0.0%
NEPTUNE TOWNSHIP	4	MONMOUTH	12,566	12,586	13,141	12,929	13,107	521	0.3%

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NEPTUNE CITY BOROUGH	4	MONMOUTH	2,350	2,361	2,375	2,370	2,424	63	0.2%
OCEAN TOWNSHIP	4	MONMOUTH	10,917	11,099	12,411	11,767	11,905	806	0.6%
OCEANPORT BOROUGH	4	MONMOUTH	2,135	2,144	2,217	2,236	2,228	84	0.3%
RED BANK BOROUGH	4	MONMOUTH	5,546	5,563	5,692	5,601	5,669	106	0.2%
ROOSEVELT BOROUGH	4	MONMOUTH	353	352	361	366	365	13	0.3%
RUMSON BOROUGH	4	MONMOUTH	2,599	2,595	2,592	2,608	2,667	72	0.2%
SEA BRIGHT BOROUGH	4	MONMOUTH	1,208	1,202	1,214	1,222	1,222	20	0.1%
SEA GIRT BOROUGH	4	MONMOUTH	1,270	1,274	1,264	1,284	1,305	31	0.2%
SHREWSBURY BOROUGH	4	MONMOUTH	1,255	1,289	1,381	1,308	1,341	52	0.3%
SHREWSBURY TOWNSHIP	4	MONMOUTH	546	546	543	548	558	12	0.2%
LAKE COMO BOROUGH	4	MONMOUTH	1,104	1,099	1,023	1,069	1,104	5	0.0%
SPRING LAKE BOROUGH	4	MONMOUTH	1,935	1,940	1,942	1,935	1,945	5	0.0%
SPRING LAKE HEIGHTS BOROUGH	4	MONMOUTH	2,948	2,950	2,966	2,972	3,038	88	0.2%
TINTON FALLS BOROUGH	4	MONMOUTH	6,807	7,422	9,669	8,047	8,087	665	0.7%
UNION BEACH BOROUGH	4	MONMOUTH	2,246	2,247	2,349	2,268	2,332	85	0.3%
UPPER FREEHOLD TOWNSHIP	4	MONMOUTH	1,976	2,281	4,128	2,909	2,849	568	1.9%
WALL TOWNSHIP	4	MONMOUTH	10,526	10,568	13,128	12,279	11,888	1,320	1.0%
WEST LONG BRANCH BOROUGH	4	MONMOUTH	2,546	2,544	2,551	2,571	2,614	70	0.2%
BOONTON TOWN	2	MORRIS	3,366	3,380	3,534	3,496	3,594	214	0.5%
BOONTON TOWNSHIP	2	MORRIS	1,706	1,718	2,020	1,846	1,989	271	1.2%
BUTLER BOROUGH	2	MORRIS	3,151	3,158	3,380	3,248	3,369	211	0.5%
CHATHAM BOROUGH	2	MORRIS	3,227	3,212	3,241	3,272	3,394	182	0.5%
CHATHAM TOWNSHIP	2	MORRIS	4,129	4,157	4,405	4,453	4,594	437	0.8%
CHESTER BOROUGH	2	MORRIS	645	647	701	655	669	22	0.3%
CHESTER TOWNSHIP	2	MORRIS	2,577	2,622	3,151	2,754	2,890	268	0.8%
DENVILLE TOWNSHIP	2	MORRIS	6,329	6,508	7,743	6,944	7,337	829	1.0%
DOVER TOWN	2	MORRIS	5,600	5,708	5,802	5,794	5,892	184	0.3%
EAST HANOVER TOWNSHIP	2	MORRIS	3,941	3,908	4,395	4,129	4,479	571	1.1%
FLORHAM PARK BOROUGH	2	MORRIS	3,998	4,007	4,816	4,429	5,058	1,051	2.0%
HANOVER TOWNSHIP	2	MORRIS	5,086	5,320	6,202	5,448	5,585	265	0.4%

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HARDING TOWNSHIP	2	MORRIS	1,275	1,288	1,400	1,509	1,457	169	1.0%
JEFFERSON TOWNSHIP	2	MORRIS	7,783	8,098	9,106	8,556	8,904	806	0.8%
KINNELON BOROUGH	2	MORRIS	3,198	3,238	3,559	3,381	3,502	264	0.7%
LINCOLN PARK BOROUGH	2	MORRIS	4,183	4,188	4,308	4,300	4,467	279	0.5%
LONG HILL TOWNSHIP	2	MORRIS	3,251	3,261	3,526	3,462	3,672	411	1.0%
MADISON BOROUGH	2	MORRIS	5,652	5,631	5,961	6,220	6,158	527	0.7%
MENDHAM BOROUGH	2	MORRIS	1,840	1,843	1,939	1,955	2,046	203	0.9%
MENDHAM TOWNSHIP	2	MORRIS	1,908	1,917	2,104	2,117	2,189	272	1.1%
MINE HILL TOWNSHIP	2	MORRIS	1,397	1,400	1,534	1,444	1,507	107	0.6%
MONTVILLE TOWNSHIP	2	MORRIS	7,696	7,751	9,306	8,166	8,738	987	1.0%
MORRIS TOWNSHIP	2	MORRIS	8,347	8,350	8,961	8,830	9,332	982	0.9%
MORRIS PLAINS BOROUGH	2	MORRIS	2,003	2,006	2,058	2,101	2,187	181	0.7%
MORRISTOWN TOWN	2	MORRIS	7,783	7,834	8,224	7,954	8,142	308	0.3%
MOUNTAIN LAKES BOROUGH	2	MORRIS	1,365	1,364	1,430	1,437	1,514	150	0.9%
MOUNT ARLINGTON BOROUGH	2	MORRIS	2,132	2,288	3,562	2,611	2,611	323	1.1%
MOUNT OLIVE TOWNSHIP	2	MORRIS	9,823	10,026	11,272	10,531	11,053	1,027	0.8%
NETCONG BOROUGH	2	MORRIS	1,084	1,085	1,073	1,160	1,157	72	0.5%
PARSIPPANY-TROY HILLS TOWNSHIP	2	MORRIS	20,595	20,976	22,289	21,444	21,879	903	0.4%
PEQUANNOCK TOWNSHIP	2	MORRIS	5,119	5,263	6,551	5,781	5,781	518	0.8%
RANDOLPH TOWNSHIP	2	MORRIS	9,339	9,379	10,714	9,861	10,554	1,175	1.0%
RIVERDALE BOROUGH	2	MORRIS	1,000	1,020	1,300	1,202	1,272	252	1.9%
ROCKAWAY BOROUGH	2	MORRIS	2,506	2,507	2,629	2,577	2,671	164	0.5%
ROCKAWAY TOWNSHIP	2	MORRIS	9,102	9,321	10,755	10,066	10,942	1,621	1.3%
ROXBURY TOWNSHIP	2	MORRIS	8,854	8,849	10,008	9,188	9,660	811	0.7%
VICTORY GARDENS BOROUGH	2	MORRIS	588	588	611	604	627	39	0.5%
WASHINGTON TOWNSHIP	2	MORRIS	6,079	6,179	6,850	6,471	6,781	602	0.8%
WHARTON BOROUGH	2	MORRIS	2,442	2,452	2,676	2,558	2,712	260	0.8%
BARNEGAT TOWNSHIP	4	OCEAN	6,755	7,765	11,413	8,621	8,850	1,085	1.1%
BARNEGAT LIGHT BOROUGH	4	OCEAN	1,212	1,212	1,247	1,214	1,214	2	0.0%
BAY HEAD BOROUGH	4	OCEAN	1,059	1,060	1,091	1,052	1,064	4	0.0%

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BEACH HAVEN BOROUGH	4	OCEAN	2,502	2,506	2,413	2,549	2,549	43	0.1%
BEACHWOOD BOROUGH	4	OCEAN	3,634	3,629	3,767	3,650	3,838	209	0.5%
BERKELEY TOWNSHIP	4	OCEAN	23,220	23,476	25,539	23,989	25,636	2,160	0.7%
BRICK TOWNSHIP	4	OCEAN	33,398	33,584	36,067	34,271	37,310	3,726	0.9%
TOMS RIVER TOWNSHIP	4	OCEAN	42,551	42,797	48,036	45,923	51,403	8,606	1.5%
EAGLESWOOD TOWNSHIP	4	OCEAN	714	713	818	819	876	163	1.7%
HARVEY CEDARS BOROUGH	4	OCEAN	1,205	1,205	1,201	1,205	1,205	0	0.0%
ISLAND HEIGHTS BOROUGH	4	OCEAN	818	821	891	830	857	36	0.4%
JACKSON TOWNSHIP	4	OCEAN	16,189	17,517	24,095	19,952	23,402	5,885	2.4%
LACEY TOWNSHIP	4	OCEAN	10,954	11,090	12,125	11,536	12,866	1,776	1.2%
LAKEHURST BOROUGH	4	OCEAN	962	961	945	1,019	1,053	92	0.8%
LAKEWOOD TOWNSHIP	4	OCEAN	22,132	22,703	27,422	24,664	27,318	4,615	1.6%
LAVALLETTE BOROUGH	4	OCEAN	3,220	3,193	3,205	3,171	3,220	27	0.1%
LITTLE EGG HARBOR TOWNSHIP	4	OCEAN	8,918	9,565	12,183	10,233	10,683	1,118	0.9%
LONG BEACH TOWNSHIP	4	OCEAN	9,181	9,320	9,537	9,345	9,345	25	0.0%
MANCHESTER TOWNSHIP	4	OCEAN	23,513	24,195	27,354	26,002	29,256	5,061	1.6%
MANTOLOKING BOROUGH	4	OCEAN	525	529	522	526	526	-3	0.0%
OCEAN TOWNSHIP	4	OCEAN	3,217	3,542	4,635	3,918	4,000	458	1.0%
OCEAN GATE BOROUGH	4	OCEAN	1,152	1,152	1,182	1,156	1,156	4	0.0%
PINE BEACH BOROUGH	4	OCEAN	877	877	886	886	937	60	0.6%
PLUMSTED TOWNSHIP	4	OCEAN	2,891	2,939	3,542	3,339	3,709	770	2.0%
POINT PLEASANT BOROUGH	4	OCEAN	8,393	8,420	8,568	8,437	8,474	54	0.1%
POINT PLEASANT BEACH BOROUGH	4	OCEAN	3,557	3,536	3,628	3,508	3,573	37	0.1%
SEASIDE HEIGHTS BOROUGH	4	OCEAN	2,822	2,860	2,964	2,949	2,949	89	0.3%
SEASIDE PARK BOROUGH	4	OCEAN	2,818	2,805	2,923	2,804	2,830	25	0.1%
SHIP BOTTOM BOROUGH	4	OCEAN	2,238	2,207	2,164	2,195	2,238	31	0.1%
SOUTH TOMS RIVER BOROUGH	4	OCEAN	1,121	1,121	1,158	1,163	1,266	145	1.0%
STAFFORD TOWNSHIP	4	OCEAN	12,522	13,089	17,359	13,683	14,758	1,669	1.0%
SURF CITY BOROUGH	4	OCEAN	2,713	2,766	3,455	2,813	2,813	47	0.1%

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TUCKERTON BOROUGH	4	OCEAN	1,956	1,949	2,160	2,159	2,338	389	1.5%
BLOOMINGDALE BOROUGH	1	PASSAIC	2,946	2,949	3,055	3,137	3,249	300	0.8%
CLIFTON CITY	1	PASSAIC	31,381	31,854	33,207	32,726	34,979	3,125	0.8%
HALEDON BOROUGH	1	PASSAIC	2,916	2,919	2,986	3,001	3,145	226	0.6%
HAWTHORNE BOROUGH	1	PASSAIC	7,433	7,442	7,635	7,608	8,028	586	0.6%
LITTLE FALLS TOWNSHIP	1	PASSAIC	4,811	4,804	5,003	4,950	5,072	268	0.5%
NORTH HALEDON BOROUGH	1	PASSAIC	2,705	2,919	3,269	3,019	3,192	273	0.7%
PASSAIC CITY	1	PASSAIC	20,194	20,214	20,238	20,309	20,783	569	0.2%
PATERSON CITY	1	PASSAIC	47,103	47,167	46,639	48,226	48,237	1,070	0.2%
POMPTON LAKES BOROUGH	1	PASSAIC	4,147	4,162	4,255	4,210	4,374	212	0.4%
PROSPECT PARK BOROUGH	1	PASSAIC	1,887	1,887	1,887	1,898	1,942	55	0.2%
RINGWOOD BOROUGH	1	PASSAIC	4,286	4,326	4,492	4,393	4,517	191	0.4%
TOTOWA BOROUGH	1	PASSAIC	3,656	3,850	4,145	4,086	4,394	544	1.1%
WANAQUE BOROUGH	1	PASSAIC	3,623	3,621	4,351	3,990	3,990	369	0.8%
WAYNE TOWNSHIP	1	PASSAIC	19,449	19,602	21,303	20,364	22,472	2,870	1.1%
WEST MILFORD TOWNSHIP	1	PASSAIC	10,355	10,708	11,456	10,819	11,074	366	0.3%
WEST PATERSON BOROUGH	1	PASSAIC	4,526	4,522	4,880	5,017	5,242	720	1.2%
ALLOWAY TOWNSHIP	6	SALEM	1,028	1,069	1,197	1,223	1,178	109	0.8%
CARNEYS POINT TOWNSHIP	6	SALEM	3,324	3,438	3,751	3,803	3,719	281	0.7%
ELMER BOROUGH	6	SALEM	562	562	565	572	575	13	0.2%
ELSINBORO TOWNSHIP	6	SALEM	524	517	509	525	525	8	0.1%
LOWER ALLOWAYS CREEK TOWNSHIP	6	SALEM	749	759	848	814	837	78	0.8%
MANNINGTON TOWNSHIP	6	SALEM	577	576	619	644	618	42	0.6%
OLDMANS TOWNSHIP	6	SALEM	705	715	788	789	781	66	0.7%
PENNS GROVE BOROUGH	6	SALEM	2,071	2,071	2,070	2,091	2,113	42	0.2%
PENNSVILLE TOWNSHIP	6	SALEM	5,654	5,721	5,991	5,919	6,030	309	0.4%
PILESGROVE TOWNSHIP	6	SALEM	1,309	1,356	1,686	1,577	1,615	259	1.5%
PITTSGROVE TOWNSHIP	6	SALEM	3,283	3,364	3,898	3,684	3,798	434	1.0%
QUINTON TOWNSHIP	6	SALEM	1,155	1,166	1,248	1,280	1,248	82	0.6%
SALEM CITY	6	SALEM	2,857	2,921	2,966	2,978	3,000	79	0.2%

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UPPER PITTSGROVE TOWNSHIP	6	SALEM	1,296	1,303	1,406	1,414	1,402	99	0.6%
WOODSTOWN BOROUGH	6	SALEM	1,450	1,451	1,598	1,566	1,594	143	0.8%
BEDMINSTER TOWNSHIP	3	SOMERSET	4,479	4,485	4,885	4,941	4,943	458	0.8%
BERNARDS TOWNSHIP	3	SOMERSET	10,010	10,052	12,110	10,360	10,776	724	0.6%
BERNARDSVILLE BOROUGH	3	SOMERSET	2,888	2,904	3,174	3,126	3,196	292	0.8%
BOUND BROOK BOROUGH	3	SOMERSET	3,801	3,801	3,794	3,838	3,832	31	0.1%
BRANCHBURG TOWNSHIP	3	SOMERSET	5,512	5,530	6,538	6,206	6,354	824	1.2%
BRIDGEWATER TOWNSHIP	3	SOMERSET	16,065	16,094	18,893	17,448	18,543	2,449	1.2%
FAR HILLS BOROUGH	3	SOMERSET	394	397	528	474	489	92	1.8%
FRANKLIN TOWNSHIP	3	SOMERSET	21,109	22,061	27,097	24,765	25,644	3,583	1.3%
GREEN BROOK TOWNSHIP	3	SOMERSET	2,293	2,317	3,150	2,465	2,613	296	1.0%
HILLSBORO TOWNSHIP	3	SOMERSET	13,060	13,067	15,005	14,679	14,875	1,808	1.1%
MANVILLE BOROUGH	3	SOMERSET	4,283	4,279	4,341	4,346	4,433	154	0.3%
MILLSTONE BOROUGH	3	SOMERSET	173	173	181	180	187	14	0.7%
MONTGOMERY TOWNSHIP	3	SOMERSET	7,065	7,396	14,061	8,476	9,534	2,138	2.1%
NORTH PLAINFIELD BOROUGH	3	SOMERSET	7,399	7,404	7,336	7,634	7,547	143	0.2%
PEAPACK-GLADSTONE BOROUGH	3	SOMERSET	914	913	1,043	1,062	1,018	105	0.9%
RARITAN BOROUGH	3	SOMERSET	2,656	2,665	2,918	2,890	2,938	273	0.8%
ROCKY HILL BOROUGH	3	SOMERSET	296	296	313	326	321	25	0.7%
SOMERVILLE BOROUGH	3	SOMERSET	4,889	4,891	4,955	5,035	5,171	280	0.5%
SOUTH BOUND BROOK BOROUGH	3	SOMERSET	1,680	1,675	1,846	1,798	1,798	123	0.6%
WARREN TOWNSHIP	3	SOMERSET	5,056	5,176	6,682	5,693	6,166	990	1.5%
WATCHUNG BOROUGH	3	SOMERSET	2,328	2,477	2,805	2,780	2,608	131	0.4%
ANDOVER BOROUGH	1	SUSSEX	273	272	292	337	302	30	0.9%
ANDOVER TOWNSHIP	1	SUSSEX	2,098	2,132	2,646	2,711	2,588	456	1.6%
BRANCHVILLE BOROUGH	1	SUSSEX	378	378	381	399	400	22	0.5%
BYRAM TOWNSHIP	1	SUSSEX	3,155	3,191	3,474	3,482	3,564	373	0.9%
FRANKFORD TOWNSHIP	1	SUSSEX	2,355	2,363	2,774	2,965	2,779	416	1.4%
FRANKLIN BOROUGH	1	SUSSEX	2,006	2,017	2,150	2,270	2,221	204	0.8%

Municipality	COAH Region	County	Units in 2002	Units in 2004	2018 Units Based On Historic Growth	2018 Units Based On "S" Curve	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
FREDON TOWNSHIP	1	SUSSEX	1,076	1,145	1,455	1,484	1,403	258	1.7%
GREEN TOWNSHIP	1	SUSSEX	1,159	1,192	1,485	1,410	1,442	250	1.6%
HAMBURG BOROUGH	1	SUSSEX	1,380	1,407	1,531	1,431	1,500	93	0.5%
HAMPTON TOWNSHIP	1	SUSSEX	2,099	2,135	2,486	2,689	2,481	346	1.3%
HARDYSTON TOWNSHIP	1	SUSSEX	3,166	3,335	4,744	3,757	3,946	611	1.4%
HOPATCONG BOROUGH	1	SUSSEX	6,198	6,205	6,274	6,347	6,591	386	0.5%
LAFAYETTE TOWNSHIP	1	SUSSEX	846	860	1,073	1,045	1,046	186	1.6%
MONTAGUE TOWNSHIP	1	SUSSEX	1,640	1,750	2,214	2,263	2,136	386	1.7%
NEWTON TOWN	1	SUSSEX	3,553	3,574	3,916	3,914	3,983	409	0.9%
OGDENSBURG BOROUGH	1	SUSSEX	903	903	912	909	932	29	0.3%
SANDYSTON TOWNSHIP	1	SUSSEX	912	912	1,039	1,137	1,055	143	1.2%
SPARTA TOWNSHIP	1	SUSSEX	6,898	7,071	7,986	7,321	7,805	734	0.8%
STANHOPE BOROUGH	1	SUSSEX	1,436	1,452	1,510	1,493	1,568	116	0.6%
STILLWATER TOWNSHIP	1	SUSSEX	2,056	2,061	2,544	2,593	2,508	447	1.6%
SUSSEX BOROUGH	1	SUSSEX	979	981	993	996	1,038	57	0.5%
VERNON TOWNSHIP	1	SUSSEX	10,168	10,274	11,482	10,963	11,702	1,428	1.1%
WALPACK TOWNSHIP	1	SUSSEX	34	34	32	34	34	0	0.0%
WANTAGE TOWNSHIP	1	SUSSEX	3,860	4,001	5,111	5,125	4,939	938	1.8%
BERKELEY HEIGHTS TOWNSHIP	2	UNION	4,599	4,599	5,111	4,967	5,361	762	1.3%
CLARK TOWNSHIP	2	UNION	5,733	5,728	5,880	5,971	6,105	377	0.5%
CRANFORD TOWNSHIP	2	UNION	8,577	8,580	8,841	8,882	9,191	611	0.6%
ELIZABETH CITY	2	UNION	43,083	43,168	44,919	44,804	46,567	3,399	0.6%
FANWOOD BOROUGH	2	UNION	2,627	2,638	2,725	2,683	2,725	87	0.3%
GARWOOD BOROUGH	2	UNION	1,786	1,790	1,821	1,802	1,805	15	0.1%
HILLSIDE TOWNSHIP	2	UNION	7,390	7,385	7,485	7,524	7,690	305	0.3%
KENILWORTH BOROUGH	2	UNION	2,935	2,939	3,042	3,014	3,091	152	0.4%
LINDEN CITY	2	UNION	15,722	15,774	16,559	16,337	16,990	1,216	0.6%
MOUNTAINSIDE BOROUGH	2	UNION	2,481	2,480	2,543	2,593	2,639	159	0.5%
NEW PROVIDENCE BOROUGH	2	UNION	4,509	4,512	4,710	4,708	4,872	360	0.6%
PLAINFIELD CITY	2	UNION	16,136	16,133	16,219	16,293	16,507	374	0.2%

Municipality	COAH Region	County	Units in 2002	Units in 2004	2018 Units Based On Historic Growth	2018 Units Based On "S" Curve	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
RAHWAY CITY	2	UNION	10,375	10,463	13,336	12,159	12,159	1,696	1.3%
ROSELLE BOROUGH	2	UNION	7,906	7,914	7,966	7,988	8,079	165	0.2%
ROSELLE PARK BOROUGH	2	UNION	5,254	5,254	5,277	5,295	5,355	101	0.2%
SCOTCH PLAINS TOWNSHIP	2	UNION	8,473	8,409	8,745	8,690	9,072	663	0.6%
SPRINGFIELD TOWNSHIP	2	UNION	6,306	6,451	6,891	6,851	7,158	707	0.9%
SUMMIT CITY	2	UNION	8,141	8,154	8,340	8,535	8,654	500	0.5%
UNION TOWNSHIP	2	UNION	20,273	20,302	21,038	20,969	21,824	1,522	0.6%
WESTFIELD TOWN	2	UNION	10,923	10,921	11,226	11,214	11,622	701	0.5%
WINFIELD TOWNSHIP	2	UNION	697	697	708	718	735	38	0.4%
ALLAMUCHY TOWNSHIP	2	WARREN	1,814	1,854	2,187	2,070	2,122	268	1.1%
ALPHA BOROUGH	2	WARREN	1,044	1,049	1,135	1,134	1,150	101	0.8%
BELVIDERE TOWN	2	WARREN	1,172	1,172	1,276	1,326	1,294	122	0.8%
BLAIRSTOWN TOWNSHIP	2	WARREN	2,209	2,239	2,791	2,979	2,641	402	1.4%
FRANKLIN TOWNSHIP	2	WARREN	1,108	1,128	1,407	1,426	1,348	220	1.5%
FRELINGHUYSEN TOWNSHIP	2	WARREN	775	795	967	1,028	921	126	1.2%
GREENWICH TOWNSHIP	2	WARREN	1,862	1,872	3,847	2,063	2,394	522	2.1%
HACKETTSTOWN TOWN	2	WARREN	3,777	3,854	4,214	3,905	3,934	80	0.2%
HARDWICK TOWNSHIP	2	WARREN	565	581	788	832	711	130	1.7%
HARMONY TOWNSHIP	2	WARREN	1,091	1,111	1,247	1,300	1,240	129	0.9%
HOPE TOWNSHIP	2	WARREN	776	785	990	1,014	931	146	1.4%
INDEPENDENCE TOWNSHIP	2	WARREN	2,301	2,318	2,589	2,439	2,577	259	0.9%
KNOWLTON TOWNSHIP	2	WARREN	1,175	1,205	1,568	1,643	1,443	238	1.5%
LIBERTY TOWNSHIP	2	WARREN	1,116	1,141	1,329	1,227	1,299	158	1.1%
LOPATCONG TOWNSHIP	2	WARREN	3,078	3,265	4,652	3,537	3,728	463	1.1%
MANSFIELD TOWNSHIP	2	WARREN	3,328	3,341	3,609	3,674	3,857	516	1.2%
OXFORD TOWNSHIP	2	WARREN	1,003	1,011	1,197	1,102	1,181	170	1.3%
PHILLIPSBURG TOWN	2	WARREN	6,671	6,664	6,837	7,041	7,132	468	0.6%
POHATCONG TOWNSHIP	2	WARREN	1,413	1,418	1,516	1,539	1,551	133	0.7%
WASHINGTON BOROUGH	2	WARREN	2,926	2,994	3,118	3,084	3,184	190	0.5%
WASHINGTON TOWNSHIP	2	WARREN	2,255	2,394	2,830	2,703	2,691	297	1.0%

Municipality	COAH Region	County	Units in 2002	Units in 2004	2018 Units Based On Historic Growth	2018 Units Based On "S" Curve	Units Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
WHITE TOWNSHIP	2	WARREN	2,089	2,161	3,004	2,516	2,651	490	1.7%
NEW JERSEY			3,385,302	3,428,504	3,766,258	3,616,101	3,697,952	269,448	0.6%

Source: Econsult Corporation (2008)

EXHIBIT B - MUNICIPAL GROWTH RATES IN THE EMPLOYMENT ALLOCATION MODEL

Employment growth of a municipality should slow down as the municipality's nonresidential growth capacity (in terms of floor space) is being reached. In other words, a municipality is unlikely to sustain its historical growth rates as measured between the 1993 and 2002 period in the following 16 years if it is approaching 100 percent build-out.

To capture this relationship between the anticipated employment growth rate between 2002 and 2018 and the 2006 build-out level, a regression model was developed to empirically estimate the implied historical growth rates that measure how build-out levels affect future growth rates. In this model, the dependent variable is the employment growth rate (a linear annual growth rate) between 1993 and 2006 for each of the 566 municipalities. The independent variable is the 1993 build-out level and was estimated by dividing the number of employment in 1993 with the sum of the 2006 employment and the anticipated increase in employment after 2002 based on all nonresidential land being developed. This equation applies to municipalities that had a positive growth between 1993 and 2006. However, for a few declining communities, this equation may end up as a build-out ratio over 100 percent if more employment was lost between 1993 and 2006 than the potential employment growth after 2002. In this case, the build-out level is estimated by changing the denominator in this equation to the sum of the 1993 employment and post-2002 potential employment that could be accommodated by a full development of all nonresidential land.

This regression model of implied historical rates of employment had 566 observations initially, but outliers with historical growth rates above the 99 percentile or below the 1 percentile in the sample were excluded. Since municipalities within the same COAH Region may behave differently as a group from others in a different COAH Region, the y-intercept of implied rates would differ by COAH regions. To capture this difference, one set of dummy variables is introduced in the model to reflect the effects of the COAH region. Unlike the housing model, the regression model of implied employment growth did not include a set of COAH regional interaction dummy variables because the relationship between capacity and growth rates was not found to differ across COAH regions.

Figure A.2 - Employment by Municipality: 2002, 2004 and 2018

Municipality	COAH Region	County	Employment in 2002	Employment in 2004	2018 Employment Based On Historic Growth	2018 Employment Based On "S" Curve	Employment Allocated 2018	Net Changes 2004 - 2018	Annual Rate of Change 2004 to 2018
ABSECON CITY	6	ATLANTIC	3329	3363	3696	3629	3616	253	0.52%
ATLANTIC CITY	6	ATLANTIC	60480	62189	66332	65195	65112	2923	0.33%
BRIGANTINE CITY	6	ATLANTIC	2057	1914	1961	2133	1953	39	0.14%
BUENA BOROUGH	6	ATLANTIC	1655	1356	2167	1761	1755	399	1.86%
BUENA VISTA TOWNSHIP	6	ATLANTIC	1235	1196	1615	1485	1479	283	1.53%
CORBIN CITY	6	ATLANTIC	550	518	605	575	573	55	0.72%
EGG HARBOR TOWNSHIP	6	ATLANTIC	16065	12724	19363	22808	19609	6885	3.14%
EGG HARBOR CITY	6	ATLANTIC	3483	3780	4181	10417	4418	638	1.12%
ESTELL MANOR CITY	6	ATLANTIC	264	316	359	654	401	85	1.72%
FOLSOM BOROUGH	6	ATLANTIC	882	924	998	1119	1044	120	0.88%
GALLOWAY TOWNSHIP	6	ATLANTIC	7516	7809	11842	12507	11971	4162	3.10%
HAMILTON TOWNSHIP	6	ATLANTIC	10601	11219	13008	14281	13394	2175	1.27%
HAMMONTON TOWN	6	ATLANTIC	8505	9199	12208	11851	11807	2608	1.80%
LINWOOD CITY	6	ATLANTIC	2873	2936	3279	3541	3277	341	0.79%
LONGPORT BOROUGH	6	ATLANTIC	233	216	268	250	255	39	1.19%
MARGATE CITY	6	ATLANTIC	1681	1832	1910	2133	1910	78	0.30%
MULLICA TOWNSHIP	6	ATLANTIC	602	720	820	911	872	152	1.38%
NORTHFIELD CITY	6	ATLANTIC	4789	4799	5473	5781	5557	758	1.05%
PLEASANTVILLE CITY	6	ATLANTIC	7699	7546	9422	9185	9151	1605	1.39%
PORT REPUBLIC CITY	6	ATLANTIC	95	118	121	120	119	1	0.06%
SOMERS POINT CITY	6	ATLANTIC	6185	6366	6683	7751	6804	438	0.48%
VENTNOR CITY	6	ATLANTIC	2053	1966	1947	1948	1940	-26	-0.10%
WEYMOUTH TOWNSHIP	6	ATLANTIC	20	219	220	272	220	1	0.03%
ALLENDALE BOROUGH	1	BERGEN	6720	7271	6522	13259	6930	-341	-0.34%
ALPINE BOROUGH	1	BERGEN	352	345	387	306	417	72	1.36%
BERGENFIELD BOROUGH	1	BERGEN	4260	4216	4753	4429	4637	421	0.68%
BOGOTA BOROUGH	1	BERGEN	1818	1744	1164	914	2038	294	1.12%
CARLSTADT BOROUGH	1	BERGEN	13417	12588	13929	13680	13698	1110	0.61%
CLIFFSIDE PARK	1	BERGEN	2909	2860	2963	2991	3285	425	0.99%

BOROUGH									
CLOSTER BOROUGH	1	BERGEN	3144	3373	3447	3673	3479	106	0.22%
CRESSKILL BOROUGH	1	BERGEN	1899	1833	2027	2247	2107	274	1.00%
DEMAREST BOROUGH	1	BERGEN	1024	1000	964	896	1142	142	0.95%
DUMONT BOROUGH	1	BERGEN	2130	2192	2474	2829	2474	282	0.87%
EAST RUTHERFORD BOROUGH	1	BERGEN	9751	9576	10493	10532	11137	1561	1.08%
EDGEWATER BOROUGH	1	BERGEN	3785	4375	5895	7545	8733	4358	5.06%
ELMWOOD PARK BOROUGH	1	BERGEN	7853	7351	9196	8747	10316	2965	2.45%
EMERSON BOROUGH	1	BERGEN	2734	2568	2594	2381	3421	853	2.07%
ENGLEWOOD CITY	1	BERGEN	14674	13908	14931	14500	15824	1916	0.93%
ENGLEWOOD CLIFFS BOROUGH	1	BERGEN	8609	8962	9437	9060	9619	657	0.51%
FAIR LAWN BOROUGH	1	BERGEN	11407	11607	12610	11376	12347	740	0.44%
FAIRVIEW BOROUGH	1	BERGEN	3136	2736	3334	2665	4570	1834	3.73%
FORT LEE BOROUGH	1	BERGEN	18097	15125	17251	17706	20172	5047	2.08%
FRANKLIN LAKES BOROUGH	1	BERGEN	7649	8212	8326	12706	8326	114	0.10%
GARFIELD CITY	1	BERGEN	6068	5880	6680	5659	7190	1310	1.45%
GLEN ROCK BOROUGH	1	BERGEN	3530	3731	3640	3972	3640	-91	-0.18%
HACKENSACK CITY	1	BERGEN	43948	45717	48074	51277	49827	4110	0.62%
HARRINGTON PARK BOROUGH	1	BERGEN	733	769	829	1055	856	87	0.77%
HASBROUCK HEIGHTS BOROUGH	1	BERGEN	4315	3909	4262	4093	4689	780	1.31%
HAWORTH BOROUGH	1	BERGEN	705	685	773	841	821	136	1.30%
HILLSDALE BOROUGH	1	BERGEN	2311	2411	2484	2660	2550	139	0.40%
HO-HO-KUS BOROUGH	1	BERGEN	1129	888	1187	1369	1244	356	2.44%
LEONIA BOROUGH	1	BERGEN	1995	2105	2185	2419	2203	98	0.33%
LITTLE FERRY BOROUGH	1	BERGEN	3097	3183	3717	3534	3691	508	1.06%
LODI BOROUGH	1	BERGEN	5729	5670	6167	5739	7396	1726	1.92%
LYNDHURST TOWNSHIP	1	BERGEN	12044	12066	13977	16738	13977	1911	1.06%
MAHWAH TOWNSHIP	1	BERGEN	13384	13253	18034	21927	21741	8488	3.60%
MAYWOOD BOROUGH	1	BERGEN	3587	4095	4326	4973	4326	231	0.39%
MIDLAND PARK BOROUGH	1	BERGEN	3667	3799	3924	4472	3962	163	0.30%
MONTVALE BOROUGH	1	BERGEN	9870	9814	10771	10201	12105	2291	1.51%

MOONACHIE BOROUGH	1	BERGEN	6978	6816	6720	6112	7114	298	0.31%
NEW MILFORD BOROUGH	1	BERGEN	1758	1709	2049	2128	2049	340	1.30%
NORTH ARLINGTON BOROUGH	1	BERGEN	3130	3231	3082	3173	3294	63	0.14%
NORTHVALE BOROUGH	1	BERGEN	4132	4241	4382	3994	4229	-12	-0.02%
NORWOOD BOROUGH	1	BERGEN	1897	2041	2139	2480	2162	121	0.41%
OAKLAND BOROUGH	1	BERGEN	6943	8004	6712	6241	8840	836	0.71%
OLD TAPPAN BOROUGH	1	BERGEN	1752	1781	1900	3883	2095	314	1.17%
ORADELL BOROUGH	1	BERGEN	2952	2893	3096	2805	3404	511	1.17%
PALISADES PARK BOROUGH	1	BERGEN	3877	3316	4598	5034	5057	1741	3.06%
PARAMUS BOROUGH	1	BERGEN	42990	43556	44898	45536	47130	3574	0.56%
PARK RIDGE BOROUGH	1	BERGEN	3575	3456	3821	4216	3821	365	0.72%
RAMSEY BOROUGH	1	BERGEN	10514	10615	10860	11120	12357	1742	1.09%
RIDGEFIELD BOROUGH	1	BERGEN	5202	6178	5939	6031	5939	-239	-0.28%
RIDGEFIELD PARK VILLAGE	1	BERGEN	5087	4090	4755	4082	6252	2162	3.08%
RIDGEWOOD VILLAGE	1	BERGEN	11548	11268	11628	11941	11938	670	0.41%
RIVER EDGE BOROUGH	1	BERGEN	2911	2698	2860	3097	3026	328	0.82%
RIVER VALE TOWNSHIP	1	BERGEN	1476	1479	1609	1548	1560	81	0.38%
ROCHELLE PARK TOWNSHIP	1	BERGEN	5000	4835	5560	4642	5314	479	0.68%
ROCKLEIGH BOROUGH	1	BERGEN	1804	2364	2418	2877	2645	281	0.81%
RUTHERFORD BOROUGH	1	BERGEN	7772	7666	8042	8037	8350	684	0.61%
SADDLE BROOK TOWNSHIP	1	BERGEN	9631	9644	10643	11059	10940	1296	0.90%
SADDLE RIVER BOROUGH	1	BERGEN	736	1017	1321	2159	1321	304	1.89%
SOUTH HACKENSACK TOWNSHIP	1	BERGEN	5192	4827	5029	4746	5399	572	0.80%
TEANECK TOWNSHIP	1	BERGEN	13706	13692	14401	15154	15104	1412	0.70%
TENAFLY BOROUGH	1	BERGEN	4243	4093	3849	3615	4660	567	0.93%
TETERBORO BOROUGH	1	BERGEN	8391	8684	8978	9159	9110	426	0.34%
UPPER SADDLE RIVER BOROUGH	1	BERGEN	3973	4099	4408	6160	4408	309	0.52%
WALDWICK BOROUGH	1	BERGEN	2911	2946	3064	3079	3354	408	0.93%
WALLINGTON BOROUGH	1	BERGEN	2513	2361	2841	2707	3922	1561	3.69%
WASHINGTON TOWNSHIP	1	BERGEN	1077	1188	598	410	1277	89	0.52%
WESTWOOD BOROUGH	1	BERGEN	5916	5683	5933	5640	6151	468	0.57%

WOODCLIFF LAKE BOROUGH	1	BERGEN	4292	4214	4817	4285	5126	912	1.41%
WOOD-RIDGE BOROUGH	1	BERGEN	3328	2984	3469	3015	4924	1940	3.64%
WYCKOFF TOWNSHIP	1	BERGEN	5044	5123	5763	6669	5814	691	0.91%
BASS RIVER TOWNSHIP	5	BURLINGTON	1175	1230	1429	6875	1813	583	2.81%
BEVERLY CITY	5	BURLINGTON	483	468	523	542	569	101	1.41%
BORDENTOWN CITY	5	BURLINGTON	1770	1594	2042	1919	2034	440	1.76%
BORDENTOWN TOWNSHIP	5	BURLINGTON	4606	4563	5061	4640	4842	279	0.42%
BURLINGTON CITY	5	BURLINGTON	5724	5681	7391	8233	8331	2650	2.77%
BURLINGTON TOWNSHIP	5	BURLINGTON	11114	11426	13526	14035	14463	3037	1.70%
CHESTERFIELD TOWNSHIP	5	BURLINGTON	439	440	470	437	449	9	0.14%
CINNAMINSON TOWNSHIP	5	BURLINGTON	7493	7600	8902	9673	10155	2555	2.09%
DELANCO TOWNSHIP	5	BURLINGTON	2462	2578	3455	4643	4263	1686	3.66%
DELRAN TOWNSHIP	5	BURLINGTON	4763	4651	5773	5694	5997	1346	1.83%
EASTAMPTON TOWNSHIP	5	BURLINGTON	614	764	920	1475	1257	493	3.62%
EDGEWATER PARK TOWNSHIP	5	BURLINGTON	1525	1718	2041	2164	2246	528	1.93%
EVESHAM TOWNSHIP	5	BURLINGTON	22326	23867	25917	34247	27100	3233	0.91%
FIELDSBORO BOROUGH	5	BURLINGTON	28	39	46	61	56	17	2.62%
FLORENCE TOWNSHIP	5	BURLINGTON	2216	2341	3000	2656	2805	464	1.30%
HAINESPORT TOWNSHIP	5	BURLINGTON	2042	1816	2427	2416	2524	708	2.38%
LUMBERTON TOWNSHIP	5	BURLINGTON	3096	3594	5083	9238	6152	2558	3.91%
MANSFIELD TOWNSHIP	5	BURLINGTON	1353	1652	2006	2404	2306	654	2.41%
MAPLE SHADE TOWNSHIP	5	BURLINGTON	5640	5507	6190	6392	6749	1242	1.46%
MEDFORD TOWNSHIP	5	BURLINGTON	8548	8657	9495	9613	10270	1613	1.23%
MEDFORD LAKES BOROUGH	5	BURLINGTON	431	420	433	390	427	8	0.13%
MOORESTOWN TOWNSHIP	5	BURLINGTON	23430	24796	26107	29376	28494	3698	1.00%
MOUNT HOLLY TOWNSHIP	5	BURLINGTON	11009	10707	10816	10336	11178	471	0.31%
MOUNT LAUREL TOWNSHIP	5	BURLINGTON	31761	32973	37899	49168	48462	15489	2.79%
NEW HANOVER TOWNSHIP	5	BURLINGTON	5781	5963	6251	7281	6251	288	0.34%
NORTH HANOVER TOWNSHIP	5	BURLINGTON	602	628	812	687	770	142	1.47%
PALMYRA BOROUGH	5	BURLINGTON	1789	1822	2031	1915	2036	214	0.80%
PEMBERTON BOROUGH	5	BURLINGTON	401	323	359	258	283	-40	-0.94%
PEMBERTON TOWNSHIP	5	BURLINGTON	5363	5892	6260	6602	7215	1323	1.46%

RIVERSIDE TOWNSHIP	5	BURLINGTON	1646	1624	1846	1386	1565	-59	-0.26%
RIVERTON BOROUGH	5	BURLINGTON	923	870	832	625	716	-154	-1.38%
SHAMONG TOWNSHIP	5	BURLINGTON	875	1044	985	1083	985	-59	-0.41%
SOUTHAMPTON TOWNSHIP	5	BURLINGTON	2444	2543	2592	3023	2814	271	0.73%
SPRINGFIELD TOWNSHIP	5	BURLINGTON	541	697	828	1024	987	290	2.52%
TABERNACLE TOWNSHIP	5	BURLINGTON	1144	1322	1465	2073	1944	622	2.79%
WASHINGTON TOWNSHIP	5	BURLINGTON	366	381	537	635	556	175	2.74%
WESTAMPTON TOWNSHIP	5	BURLINGTON	3650	3743	4619	5176	5091	1348	2.22%
WILLINGBORO TOWNSHIP	5	BURLINGTON	7019	7442	7897	9170	9010	1568	1.38%
WOODLAND TOWNSHIP	5	BURLINGTON	283	328	622	1132	883	555	7.33%
WRIGHTSTOWN BOROUGH	5	BURLINGTON	570	712	986	824	900	188	1.69%
AUDUBON BOROUGH	5	CAMDEN	2357	2613	3170	4120	3170	557	1.39%
AUDUBON PARK BOROUGH	5	CAMDEN	52	54	67	128	109	55	5.14%
BARRINGTON BOROUGH	5	CAMDEN	1353	1372	1693	1659	1846	474	2.14%
BELLMAWR BOROUGH	5	CAMDEN	5042	5066	5424	4975	5621	555	0.75%
BERLIN BOROUGH	5	CAMDEN	4386	4400	5371	4755	5286	886	1.32%
BERLIN TOWNSHIP	5	CAMDEN	5074	5333	6584	9558	8501	3168	3.39%
BROOKLAWN BOROUGH	5	CAMDEN	1091	1082	1167	1521	1191	109	0.69%
CAMDEN CITY	5	CAMDEN	30916	30448	36451	32185	35716	5268	1.15%
CHERRY HILL TOWNSHIP	5	CAMDEN	49898	51821	54564	58093	57772	5951	0.78%
CHESILHURST BOROUGH	5	CAMDEN	126	125	211	335	309	184	6.68%
CLEMENTON BOROUGH	5	CAMDEN	2327	2608	2824	2838	3139	531	1.33%
COLLINGSWOOD BOROUGH	5	CAMDEN	3086	2974	3143	3196	3325	351	0.80%
GIBBSBORO BOROUGH	5	CAMDEN	1717	1715	1709	1281	1422	-293	-1.33%
GLOUCESTER TOWNSHIP	5	CAMDEN	9996	10038	14156	15029	16336	6298	3.54%
GLOUCESTER CITY	5	CAMDEN	2561	2668	2740	2535	2873	205	0.53%
HADDON TOWNSHIP	5	CAMDEN	3521	3557	3781	3431	3807	250	0.49%
HADDONFIELD BOROUGH	5	CAMDEN	6019	6417	6236	6923	6236	-181	-0.20%
HADDON HEIGHTS BOROUGH	5	CAMDEN	2155	2091	2227	2338	2398	307	0.98%
HI-NELLA BOROUGH	5	CAMDEN	59	60	83	73	80	21	2.14%
LAUREL SPRINGS BOROUGH	5	CAMDEN	835	964	848	1029	860	-104	-0.81%
LAWNSIDE BOROUGH	5	CAMDEN	2626	2750	3340	3618	3967	1218	2.65%

LINDENWOLD BOROUGH	5	CAMDEN	2088	2199	2538	2547	2787	588	1.71%
MAGNOLIA BOROUGH	5	CAMDEN	620	669	750	830	867	198	1.87%
MERCHANTVILLE BOROUGH	5	CAMDEN	834	841	817	797	834	-7	-0.06%
MOUNT EPHRAIM BOROUGH	5	CAMDEN	1102	1178	1129	1143	1163	-15	-0.09%
OAKLYN BOROUGH	5	CAMDEN	874	850	785	740	821	-29	-0.25%
PENNSAUKEN TOWNSHIP	5	CAMDEN	23029	23023	25085	24394	27043	4020	1.16%
PINE HILL BOROUGH	5	CAMDEN	971	1007	1225	1684	1669	662	3.67%
PINE VALLEY BOROUGH	5	CAMDEN	131	137	195	765	445	308	8.78%
RUNNEMEDE BOROUGH	5	CAMDEN	2572	2476	2894	2968	3271	795	2.01%
SOMERDALE BOROUGH	5	CAMDEN	1703	1714	2020	2045	2260	546	1.99%
STRATFORD BOROUGH	5	CAMDEN	2333	2331	2405	2055	2280	-51	-0.16%
TAVISTOCK BOROUGH	5	CAMDEN	1	3	1	1	1	-2	-7.55%
VOORHEES TOWNSHIP	5	CAMDEN	17098	17557	20349	22287	24391	6834	2.38%
WATERFORD TOWNSHIP	5	CAMDEN	3529	4093	4254	5190	4881	788	1.27%
WINSLOW TOWNSHIP	5	CAMDEN	6612	6697	8221	7957	8649	1952	1.84%
WOODLYNNE BOROUGH	5	CAMDEN	194	202	212	248	212	10	0.35%
AVALON BOROUGH	6	CAPE MAY	1604	1720	1655	1724	1655	-65	-0.27%
CAPE MAY CITY	6	CAPE MAY	5337	5848	5899	7098	5899	51	0.06%
CAPE MAY POINT BOROUGH	6	CAPE MAY	239	250	261	905	261	11	0.31%
DENNIS TOWNSHIP	6	CAPE MAY	1938	2008	2418	2574	2199	191	0.65%
LOWER TOWNSHIP	6	CAPE MAY	3302	3379	3742	3716	3396	17	0.04%
MIDDLE TOWNSHIP	6	CAPE MAY	9875	10150	12498	12543	11369	1219	0.81%
NORTH WILDWOOD CITY	6	CAPE MAY	1885	2022	1884	1704	1750	-272	-1.03%
OCEAN CITY	6	CAPE MAY	6264	6902	6388	6672	6388	-514	-0.55%
SEA ISLE CITY	6	CAPE MAY	1401	1508	1286	1280	1282	-226	-1.15%
STONE HARBOR BOROUGH	6	CAPE MAY	1208	1259	1177	1157	1162	-97	-0.57%
UPPER TOWNSHIP	6	CAPE MAY	3425	3859	5021	4949	4502	643	1.11%
WEST CAPE MAY BOROUGH	6	CAPE MAY	283	321	298	393	304	-17	-0.39%
WEST WILDWOOD BOROUGH	6	CAPE MAY	40	42	43	99	43	2	0.25%
WILDWOOD CITY	6	CAPE MAY	4782	5268	5339	5668	5339	71	0.10%
WILDWOOD CREST BOROUGH	6	CAPE MAY	2262	2296	2240	1961	2031	-265	-0.87%
WOODBINE BOROUGH	6	CAPE MAY	618	684	1140	1007	916	232	2.11%

BRIDGETON CITY	6	CUMBERLAND	9419	9061	13336	11645	11209	2148	1.53%
COMMERCIAL TOWNSHIP	6	CUMBERLAND	493	500	687	534	435	-65	-0.99%
DEERFIELD TOWNSHIP	6	CUMBERLAND	733	688	1488	1212	987	299	2.61%
DOWNE TOWNSHIP	6	CUMBERLAND	316	323	582	815	474	151	2.78%
FAIRFIELD TOWNSHIP	6	CUMBERLAND	1400	1588	1785	1745	1420	-168	-0.80%
GREENWICH TOWNSHIP	6	CUMBERLAND	98	100	146	150	118	18	1.19%
HOPEWELL TOWNSHIP	6	CUMBERLAND	249	245	399	298	248	3	0.09%
LAWRENCE TOWNSHIP	6	CUMBERLAND	1431	1487	2526	3785	2055	568	2.34%
MAURICE RIVER TOWNSHIP	6	CUMBERLAND	456	469	799	742	604	135	1.82%
MILLVILLE CITY	6	CUMBERLAND	10939	10562	16646	12976	10911	349	0.23%
SHILOH BOROUGH	6	CUMBERLAND	185	145	214	371	192	47	2.03%
STOW CREEK TOWNSHIP	6	CUMBERLAND	461	668	864	3403	1026	358	3.11%
UPPER DEERFIELD TOWNSHIP	6	CUMBERLAND	1990	1916	3117	2828	2301	385	1.32%
VINELAND CITY	6	CUMBERLAND	28327	29901	44309	40545	32992	3091	0.71%
BELLEVILLE TOWNSHIP	2	ESSEX	8729	9325	10012	9472	10305	980	0.72%
BLOOMFIELD TOWNSHIP	2	ESSEX	13628	13229	14443	13752	15859	2630	1.30%
CALDWELL BOROUGH	2	ESSEX	2483	2473	2593	2752	3140	667	1.72%
CEDAR GROVE TOWNSHIP	2	ESSEX	5530	5758	6342	6928	7800	2042	2.19%
CITY OF ORANGE TOWNSHIP	2	ESSEX	7039	6247	7201	5715	6572	325	0.36%
EAST ORANGE CITY	2	ESSEX	15600	16059	17274	16135	18614	2555	1.06%
ESSEX FELLS BOROUGH	2	ESSEX	233	211	331	378	365	154	3.99%
FAIRFIELD TOWNSHIP	2	ESSEX	23443	23233	24875	26185	26227	2994	0.87%
GLEN RIDGE BOROUGH	2	ESSEX	1120	1033	1064	1080	1167	134	0.88%
IRVINGTON TOWNSHIP	2	ESSEX	9771	9448	11200	10738	12377	2929	1.95%
LIVINGSTON TOWNSHIP	2	ESSEX	22820	22522	23195	24651	25366	2844	0.85%
MAPLEWOOD TOWNSHIP	2	ESSEX	5348	4978	5612	4615	5307	329	0.46%
MILLBURN TOWNSHIP	2	ESSEX	14732	17209	17703	20713	17703	494	0.20%
MONTCLAIR TOWNSHIP	2	ESSEX	12920	12732	13506	13758	14191	1459	0.78%
NEWARK CITY	2	ESSEX	134035	132378	155245	141559	163090	30712	1.50%
NORTH CALDWELL BOROUGH	2	ESSEX	609	547	940	865	974	427	4.21%
NUTLEY TOWNSHIP	2	ESSEX	10584	10935	11175	10202	11738	803	0.51%
ROSELAND BOROUGH	2	ESSEX	10882	10369	11313	10262	11834	1465	0.95%

SOUTH ORANGE VILLAGE TOWNSHIP	2	ESSEX	5381	5560	5660	6324	6088	528	0.65%
VERONA TOWNSHIP	2	ESSEX	4162	4031	4096	3764	4340	309	0.53%
WEST CALDWELL TOWNSHIP	2	ESSEX	8277	7845	9012	8756	9890	2045	1.67%
WEST ORANGE TOWNSHIP	2	ESSEX	17238	17101	18357	16994	19576	2475	0.97%
CLAYTON BOROUGH	5	GLOUCESTER	1101	985	1347	1076	1081	96	0.67%
DEPTFORD TOWNSHIP	5	GLOUCESTER	10959	11306	14511	14184	14114	2808	1.60%
EAST GREENWICH TOWNSHIP	5	GLOUCESTER	1363	1515	1953	2360	2093	578	2.34%
ELK TOWNSHIP	5	GLOUCESTER	473	553	729	846	726	173	1.96%
FRANKLIN TOWNSHIP	5	GLOUCESTER	2321	2428	3226	2975	2960	532	1.43%
GLASSBORO BOROUGH	5	GLOUCESTER	5583	5676	7840	8321	7801	2125	2.30%
GREENWICH TOWNSHIP	5	GLOUCESTER	1214	1138	1466	1041	1128	-10	-0.06%
HARRISON TOWNSHIP	5	GLOUCESTER	1851	2304	3155	6257	4006	1702	4.03%
LOGAN TOWNSHIP	5	GLOUCESTER	3826	3990	6041	5823	5794	1804	2.70%
MANTUA TOWNSHIP	5	GLOUCESTER	7613	8772	10658	19126	14000	5228	3.40%
MONROE TOWNSHIP	5	GLOUCESTER	6297	7070	9089	10217	9065	1995	1.79%
NATIONAL PARK BOROUGH	5	GLOUCESTER	272	315	362	428	388	73	1.50%
NEWFIELD BOROUGH	5	GLOUCESTER	1235	1066	1005	828	896	-170	-1.23%
PAULSBORO BOROUGH	5	GLOUCESTER	3263	3596	4269	5045	4646	1050	1.85%
PITMAN BOROUGH	5	GLOUCESTER	2550	2490	3056	2592	2686	196	0.54%
SOUTH HARRISON TOWNSHIP	5	GLOUCESTER	400	463	298	307	297	-166	-3.12%
SWEDESBORO BOROUGH	5	GLOUCESTER	5887	6386	7584	24356	7584	1198	1.24%
WASHINGTON TOWNSHIP	5	GLOUCESTER	10969	11268	13014	12711	12648	1380	0.83%
WENONAH BOROUGH	5	GLOUCESTER	757	705	735	821	787	82	0.79%
WEST DEPTFORD TOWNSHIP	5	GLOUCESTER	8368	8816	11207	13979	12154	3338	2.32%
WESTVILLE BOROUGH	5	GLOUCESTER	2400	2612	2737	3008	2737	125	0.33%
WOODBURY CITY	5	GLOUCESTER	11318	11499	11613	13021	11612	113	0.07%
WOODBURY HEIGHTS BOROUGH	5	GLOUCESTER	2037	2025	2228	2340	2317	292	0.97%
WOOLWICH TOWNSHIP	5	GLOUCESTER	678	812	1406	5402	2828	2016	9.32%
BAYONNE CITY	1	HUDSON	14535	14974	22600	17509	19181	4207	1.78%
EAST NEWARK BOROUGH	1	HUDSON	833	743	864	641	725	-18	-0.18%
GUTTENBERG TOWN	1	HUDSON	1344	1299	1562	1288	1357	58	0.31%

HARRISON TOWN	1	HUDSON	3861	3737	5944	4291	4769	1032	1.76%
HOBOKEN CITY	1	HUDSON	13870	14488	16401	19176	16401	1913	0.89%
JERSEY CITY	1	HUDSON	94837	97628	123048	122731	130369	32741	2.09%
KEARNY TOWN	1	HUDSON	18209	16208	19748	17407	19550	3342	1.35%
NORTH BERGEN TOWNSHIP	1	HUDSON	20403	19083	24829	20440	22551	3468	1.20%
SECAUCUS TOWN	1	HUDSON	36346	36478	39312	36211	40533	4055	0.76%
UNION CITY	1	HUDSON	11495	10744	13649	13343	14305	3561	2.07%
WEEHAWKEN TOWNSHIP	1	HUDSON	7855	8223	9396	10453	10946	2723	2.06%
WEST NEW YORK TOWN	1	HUDSON	7117	7008	8232	7181	7983	975	0.93%
ALEXANDRIA TOWNSHIP	3	HUNTERDON	299	295	599	403	443	148	2.95%
BETHLEHEM TOWNSHIP	3	HUNTERDON	352	329	449	298	373	44	0.90%
BLOOMSBURY BOROUGH	3	HUNTERDON	673	670	605	614	653	-17	-0.18%
CALIFON BOROUGH	3	HUNTERDON	893	890	930	1264	930	40	0.31%
CLINTON TOWN	3	HUNTERDON	2355	2295	3199	3849	3839	1544	3.74%
CLINTON TOWNSHIP	3	HUNTERDON	4491	4317	6545	5521	5961	1644	2.33%
DELAWARE TOWNSHIP	3	HUNTERDON	317	315	482	424	457	142	2.69%
EAST AMWELL TOWNSHIP	3	HUNTERDON	1006	1212	1364	2183	1411	199	1.09%
FLEMINGTON BOROUGH	3	HUNTERDON	6425	6959	7083	7196	7280	321	0.32%
FRANKLIN TOWNSHIP	3	HUNTERDON	1004	1179	1317	2726	1631	452	2.35%
FRENCHTOWN BOROUGH	3	HUNTERDON	739	877	879	1035	879	2	0.02%
GLEN GARDNER BOROUGH	3	HUNTERDON	557	561	587	773	587	26	0.32%
HAMPTON BOROUGH	3	HUNTERDON	614	653	956	1149	956	303	2.76%
HIGH BRIDGE BOROUGH	3	HUNTERDON	554	588	765	930	811	223	2.32%
HOLLAND TOWNSHIP	3	HUNTERDON	207	219	242	130	155	-64	-2.44%
KINGWOOD TOWNSHIP	3	HUNTERDON	346	336	550	418	464	128	2.33%
LAMBERTVILLE CITY	3	HUNTERDON	1802	1926	2397	2847	2855	929	2.85%
LEBANON BOROUGH	3	HUNTERDON	1975	2084	2121	2805	2354	270	0.87%
LEBANON TOWNSHIP	3	HUNTERDON	1034	1030	1103	1229	1103	73	0.49%
MILFORD BOROUGH	3	HUNTERDON	1046	977	902	779	915	-62	-0.47%
RARITAN TOWNSHIP	3	HUNTERDON	8347	8453	10676	11798	12335	3882	2.74%
READINGTON TOWNSHIP	3	HUNTERDON	6287	8163	8258	12232	8322	159	0.14%
STOCKTON BOROUGH	3	HUNTERDON	409	444	505	670	505	61	0.92%
TEWKSBURY TOWNSHIP	3	HUNTERDON	797	835	1116	2058	1485	651	4.20%

UNION TOWNSHIP	3	HUNTERDON	1223	1089	1513	936	1111	22	0.14%
WEST AMWELL TOWNSHIP	3	HUNTERDON	257	242	392	287	321	79	2.04%
EAST WINDSOR TOWNSHIP	4	MERCER	6942	7148	12259	9477	9799	2651	2.28%
EWING TOWNSHIP	4	MERCER	14959	14393	23805	18278	18889	4496	1.96%
HAMILTON TOWNSHIP	4	MERCER	27507	28345	38475	33628	36057	7712	1.73%
HIGHTSTOWN BOROUGH	4	MERCER	3859	3552	4505	4016	4262	710	1.31%
HOPEWELL BOROUGH	4	MERCER	617	646	926	923	953	307	2.82%
HOPEWELL TOWNSHIP	4	MERCER	4204	4402	8280	8194	8465	4064	4.78%
LAWRENCE TOWNSHIP	4	MERCER	22831	23517	31875	28478	30029	6512	1.76%
PENNINGTON BOROUGH	4	MERCER	4173	4692	5027	11460	5027	335	0.49%
PRINCETON BOROUGH	4	MERCER	19817	21606	24451	29598	24451	2845	0.89%
PRINCETON TOWNSHIP	4	MERCER	10256	10856	11731	17007	11742	886	0.56%
TRENTON CITY	4	MERCER	30779	32143	43610	38151	39856	7713	1.55%
WASHINGTON TOWNSHIP	4	MERCER	4859	6022	7349	17679	7368	1346	1.45%
WEST WINDSOR TOWNSHIP	4	MERCER	20153	19309	26737	29348	27157	7848	2.47%
CARTERET BOROUGH	3	MIDDLESEX	9517	9019	10358	10469	10086	1067	0.80%
CRANBURY TOWNSHIP	3	MIDDLESEX	13375	10394	14353	14436	13975	3581	2.14%
DUNELLEN BOROUGH	3	MIDDLESEX	1277	1234	1233	1163	1189	-45	-0.26%
EAST BRUNSWICK TOWNSHIP	3	MIDDLESEX	22152	22092	28027	26402	25961	3869	1.16%
EDISON TOWNSHIP	3	MIDDLESEX	75173	76407	88168	89308	85847	9440	0.84%
HELMETTA BOROUGH	3	MIDDLESEX	172	204	270	483	317	113	3.20%
HIGHLAND PARK BOROUGH	3	MIDDLESEX	2562	2462	3459	3276	3190	728	1.87%
JAMESBURG BOROUGH	3	MIDDLESEX	4145	4407	3866	6879	3764	-643	-1.12%
METUCHEN BOROUGH	3	MIDDLESEX	5721	6113	6848	7572	7264	1151	1.24%
MIDDLESEX BOROUGH	3	MIDDLESEX	6598	6178	6740	6442	6504	326	0.37%
MILLTOWN BOROUGH	3	MIDDLESEX	2613	2920	2721	3095	2726	-194	-0.49%
MONROE TOWNSHIP	3	MIDDLESEX	4856	5212	10300	31216	14743	9531	7.71%
NEW BRUNSWICK CITY	3	MIDDLESEX	33492	34648	41308	38580	37565	2917	0.58%
NORTH BRUNSWICK TOWNSHIP	3	MIDDLESEX	16446	17828	24620	26433	23972	6144	2.14%
OLD BRIDGE TOWNSHIP	3	MIDDLESEX	11654	11487	15652	15388	14983	3496	1.92%
PERTH AMBOY CITY	3	MIDDLESEX	12228	12254	16233	13574	13217	963	0.54%

PISCATAWAY TOWNSHIP	3	MIDDLESEX	32783	32693	40472	35493	34559	1866	0.40%
PLAINSBORO TOWNSHIP	3	MIDDLESEX	12425	12800	17725	16081	15657	2857	1.45%
SAYREVILLE BOROUGH	3	MIDDLESEX	7223	7602	12063	9812	9553	1951	1.65%
SOUTH AMBOY CITY	3	MIDDLESEX	2758	2757	3775	3236	3151	394	0.96%
SOUTH BRUNSWICK TOWNSHIP	3	MIDDLESEX	21013	20697	28461	26575	25875	5178	1.61%
SOUTH PLAINFIELD BOROUGH	3	MIDDLESEX	18986	19496	22423	22801	22627	3131	1.07%
SOUTH RIVER BOROUGH	3	MIDDLESEX	3153	3410	4126	5265	4485	1075	1.98%
SPOTSWOOD BOROUGH	3	MIDDLESEX	2417	2628	2874	2917	2798	170	0.45%
WOODBRIDGE TOWNSHIP	3	MIDDLESEX	48894	48303	56687	56827	55196	6893	0.96%
ABERDEEN TOWNSHIP	4	MONMOUTH	4415	4841	6840	6278	6776	1935	2.43%
ALLENHURST BOROUGH	4	MONMOUTH	547	563	504	342	382	-181	-2.73%
ALLENTOWN BOROUGH	4	MONMOUTH	1644	1853	1793	3450	1792	-61	-0.24%
ASBURY PARK CITY	4	MONMOUTH	3617	3385	5055	3990	4487	1102	2.03%
ATLANTIC HIGHLANDS BOROUGH	4	MONMOUTH	2310	2127	2720	3613	2729	602	1.80%
AVON-BY-THE-SEA BOROUGH	4	MONMOUTH	438	450	544	435	443	-7	-0.11%
BELMAR BOROUGH	4	MONMOUTH	2157	2055	2340	2179	2211	156	0.52%
BRADLEY BEACH BOROUGH	4	MONMOUTH	814	883	899	961	898	15	0.12%
BRIELLE BOROUGH	4	MONMOUTH	1254	1316	1431	1470	1436	120	0.63%
COLTS NECK TOWNSHIP	4	MONMOUTH	2560	2918	3086	4664	3084	166	0.40%
DEAL BOROUGH	4	MONMOUTH	609	716	626	608	626	-90	-0.95%
EATONTOWN BOROUGH	4	MONMOUTH	12336	12886	19041	19484	19841	6955	3.13%
ENGLISHTOWN BOROUGH	4	MONMOUTH	2786	2822	3216	3361	3222	400	0.95%
FAIR HAVEN BOROUGH	4	MONMOUTH	1257	1368	1236	1260	1263	-105	-0.57%
FARMINGDALE BOROUGH	4	MONMOUTH	3677	3888	4692	8589	4692	804	1.35%
FREEHOLD BOROUGH	4	MONMOUTH	13810	16295	16453	21886	16453	158	0.07%
FREEHOLD TOWNSHIP	4	MONMOUTH	14345	13560	20424	16527	18635	5075	2.30%
HAZLET TOWNSHIP	4	MONMOUTH	6331	6743	7924	8184	8032	1289	1.26%
HIGHLANDS BOROUGH	4	MONMOUTH	958	933	1540	1277	1373	440	2.80%
HOLMDEL TOWNSHIP	4	MONMOUTH	10594	9992	13044	9726	11001	1009	0.69%
HOWELL TOWNSHIP	4	MONMOUTH	8683	9700	17436	15908	16913	7213	4.05%
INTERLAKEN BOROUGH	4	MONMOUTH	48	27	52	121	52	25	4.79%

KEANSBURG BOROUGH	4	MONMOUTH	1316	1438	1532	2071	1532	94	0.45%
KEYPORT BOROUGH	4	MONMOUTH	2487	2553	3069	3131	3136	583	1.48%
LITTLE SILVER BOROUGH	4	MONMOUTH	2294	2330	2347	2756	2346	16	0.05%
LOCH ARBOUR VILLAGE	4	MONMOUTH	53	63	64	300	64	1	0.11%
LONG BRANCH CITY	4	MONMOUTH	8685	9105	12165	10353	11269	2164	1.53%
MANALAPAN TOWNSHIP	4	MONMOUTH	8497	9696	11665	16051	11785	2089	1.40%
MANASQUAN BOROUGH	4	MONMOUTH	5711	6193	5954	9136	5954	-239	-0.28%
MARLBORO TOWNSHIP	4	MONMOUTH	8187	8168	12218	12917	12852	4684	3.29%
MATAWAN BOROUGH	4	MONMOUTH	4114	4419	4664	5544	4661	242	0.38%
MIDDLETOWN TOWNSHIP	4	MONMOUTH	16569	15996	19309	17170	19727	3731	1.51%
MILLSTONE TOWNSHIP	4	MONMOUTH	1351	1427	2403	3022	2616	1189	4.42%
MONMOUTH BEACH BOROUGH	4	MONMOUTH	556	622	698	767	698	76	0.83%
NEPTUNE TOWNSHIP	4	MONMOUTH	10892	12324	15272	14375	15600	3276	1.70%
NEPTUNE CITY BOROUGH	4	MONMOUTH	6013	6911	7232	14002	7232	321	0.32%
OCEAN TOWNSHIP	4	MONMOUTH	8885	9516	11993	11355	12270	2754	1.83%
OCEANPORT BOROUGH	4	MONMOUTH	7782	7538	8115	7989	8113	575	0.53%
RED BANK BOROUGH	4	MONMOUTH	16106	14771	16975	17502	16982	2211	1.00%
ROOSEVELT BOROUGH	4	MONMOUTH	94	99	113	127	117	18	1.20%
RUMSON BOROUGH	4	MONMOUTH	1589	1481	1596	1929	1596	115	0.54%
SEA BRIGHT BOROUGH	4	MONMOUTH	822	916	757	725	822	-94	-0.77%
SEA GIRT BOROUGH	4	MONMOUTH	1921	1956	2027	2862	2027	71	0.26%
SHREWSBURY BOROUGH	4	MONMOUTH	4474	4626	4950	5068	4952	326	0.49%
SHREWSBURY TOWNSHIP	4	MONMOUTH	1304	1620	1615	2821	1615	-5	-0.02%
LAKE COMO BOROUGH	4	MONMOUTH	354	382	843	372	354	-28	-0.54%
SPRING LAKE BOROUGH	4	MONMOUTH	1124	1089	1071	1048	1124	35	0.23%
SPRING LAKE HEIGHTS BOROUGH	4	MONMOUTH	1345	1440	1520	1634	1530	90	0.43%
TINTON FALLS BOROUGH	4	MONMOUTH	6656	7236	12821	12235	13008	5772	4.28%
UNION BEACH BOROUGH	4	MONMOUTH	959	949	1120	995	1087	138	0.97%
UPPER FREEHOLD TOWNSHIP	4	MONMOUTH	1453	1665	2044	3432	2121	456	1.74%
WALL TOWNSHIP	4	MONMOUTH	9479	9291	18941	14086	15741	6450	3.84%
WEST LONG BRANCH	4	MONMOUTH	5477	5855	6063	7122	6060	205	0.25%

BOROUGH									
BOONTON TOWN	2	MORRIS	3019	3274	3400	4141	3404	130	0.28%
BOONTON TOWNSHIP	2	MORRIS	1444	1577	1797	1861	1972	395	1.61%
BUTLER BOROUGH	2	MORRIS	2814	2921	3054	3059	3253	332	0.77%
CHATHAM BOROUGH	2	MORRIS	3870	4165	4048	4463	4151	-14	-0.02%
CHATHAM TOWNSHIP	2	MORRIS	1859	1685	1943	1909	2041	356	1.38%
CHESTER BOROUGH	2	MORRIS	2688	2850	3179	3389	3585	735	1.65%
CHESTER TOWNSHIP	2	MORRIS	1279	1158	1434	1278	1361	203	1.16%
DENVILLE TOWNSHIP	2	MORRIS	8890	9278	9727	11013	11254	1976	1.39%
DOVER TOWN	2	MORRIS	6933	6971	9509	7891	8574	1603	1.49%
EAST HANOVER TOWNSHIP	2	MORRIS	14557	14699	15673	17780	16942	2243	1.02%
FLORHAM PARK BOROUGH	2	MORRIS	13430	13706	16673	18189	19266	5560	2.46%
HANOVER TOWNSHIP	2	MORRIS	16478	16504	19418	19358	20612	4108	1.60%
HARDING TOWNSHIP	2	MORRIS	896	878	1002	933	976	98	0.76%
JEFFERSON TOWNSHIP	2	MORRIS	2374	2529	2923	3298	3495	966	2.34%
KINNELON BOROUGH	2	MORRIS	1884	1934	1965	2462	2038	104	0.37%
LINCOLN PARK BOROUGH	2	MORRIS	3410	3564	3751	4152	4027	463	0.88%
LONG HILL TOWNSHIP	2	MORRIS	2623	2683	3486	4290	3486	803	1.89%
MADISON BOROUGH	2	MORRIS	9272	8819	9669	11553	12022	3203	2.24%
MENDHAM BOROUGH	2	MORRIS	1599	1736	2093	3255	3086	1350	4.19%
MENDHAM TOWNSHIP	2	MORRIS	792	808	1164	1111	1158	350	2.60%
MINE HILL TOWNSHIP	2	MORRIS	478	540	823	1354	1205	665	5.90%
MONTVILLE TOWNSHIP	2	MORRIS	11486	11257	12374	16172	13155	1898	1.12%
MORRIS TOWNSHIP	2	MORRIS	3417	3530	4521	3706	3964	435	0.83%
MORRIS PLAINS BOROUGH	2	MORRIS	10033	9946	11111	11069	11788	1842	1.22%
MORRISTOWN TOWN	2	MORRIS	34804	33945	32130	30425	32543	-1402	-0.30%
MOUNTAIN LAKES BOROUGH	2	MORRIS	2761	2735	3077	3688	3795	1060	2.37%
MOUNT ARLINGTON BOROUGH	2	MORRIS	1335	1239	1525	1701	1678	439	2.19%
MOUNT OLIVE TOWNSHIP	2	MORRIS	10839	11156	12098	15825	15952	4796	2.59%
NETCONG BOROUGH	2	MORRIS	914	867	970	983	1045	178	1.34%
PARSIPPANY-TROY HILLS TOWNSHIP	2	MORRIS	50130	53991	64780	75202	79011	25020	2.76%
PEQUANNOCK	2	MORRIS	6042	6400	6941	7533	8027	1627	1.63%

TOWNSHIP									
RANDOLPH TOWNSHIP	2	MORRIS	7762	7656	9056	9253	9826	2170	1.80%
RIVERDALE BOROUGH	2	MORRIS	2568	2841	3565	4122	4369	1528	3.12%
ROCKAWAY BOROUGH	2	MORRIS	6247	6577	7432	10802	7432	855	0.88%
ROCKAWAY TOWNSHIP	2	MORRIS	10488	10289	11981	12487	13604	3315	2.01%
ROXBURY TOWNSHIP	2	MORRIS	8426	8602	10169	10720	11588	2986	2.15%
VICTORY GARDENS BOROUGH	2	MORRIS	110	101	105	107	113	13	0.84%
WASHINGTON TOWNSHIP	2	MORRIS	2174	2190	2854	3417	3478	1288	3.36%
WHARTON BOROUGH	2	MORRIS	3098	3225	3654	6944	4513	1288	2.43%
BARNEGAT TOWNSHIP	4	OCEAN	1814	2137	4531	5071	4104	1967	4.77%
BARNEGAT LIGHT BOROUGH	4	OCEAN	349	405	403	483	403	-2	-0.04%
BAY HEAD BOROUGH	4	OCEAN	437	468	445	356	351	-117	-2.03%
BEACH HAVEN BOROUGH	4	OCEAN	1733	1788	1574	1553	1552	-236	-1.01%
BEACHWOOD BOROUGH	4	OCEAN	864	789	986	1143	959	170	1.40%
BERKELEY TOWNSHIP	4	OCEAN	4206	4798	7938	7510	6803	2005	2.53%
BRICK TOWNSHIP	4	OCEAN	17853	18789	23213	26818	23469	4680	1.60%
TOMS RIVER TOWNSHIP	4	OCEAN	40080	40994	58398	54262	49154	8160	1.31%
EAGLESWOOD TOWNSHIP	4	OCEAN	432	639	1697	4719	1864	1225	7.95%
HARVEY CEDARS BOROUGH	4	OCEAN	225	259	240	286	240	-19	-0.54%
ISLAND HEIGHTS BOROUGH	4	OCEAN	271	331	358	947	358	27	0.56%
JACKSON TOWNSHIP	4	OCEAN	10221	8943	17358	13067	11837	2894	2.02%
LACEY TOWNSHIP	4	OCEAN	5251	5465	9902	8709	7890	2425	2.66%
LAKEHURST BOROUGH	4	OCEAN	1572	3113	3046	7155	3046	-67	-0.16%
LAKEWOOD TOWNSHIP	4	OCEAN	23659	24365	35550	35256	31937	7572	1.95%
LAVALLETTE BOROUGH	4	OCEAN	809	882	863	868	863	-19	-0.16%
LITTLE EGG HARBOR TOWNSHIP	4	OCEAN	2137	2475	4527	7053	4376	1901	4.15%
LONG BEACH TOWNSHIP	4	OCEAN	1315	1454	1370	1484	1370	-84	-0.42%
MANCHESTER TOWNSHIP	4	OCEAN	3463	3622	9164	7965	7216	3594	5.05%
MANTOLOKING BOROUGH	4	OCEAN	181	184	175	221	159	-25	-1.04%
OCEAN TOWNSHIP	4	OCEAN	855	979	1737	2536	1727	748	4.14%
OCEAN GATE BOROUGH	4	OCEAN	108	89	129	177	129	40	2.69%

PINE BEACH BOROUGH	4	OCEAN	517	101	432	359	325	224	8.71%
PLUMSTED TOWNSHIP	4	OCEAN	982	1623	1994	2529	1833	210	0.87%
POINT PLEASANT BOROUGH	4	OCEAN	4408	3956	4776	3595	3613	-343	-0.65%
POINT PLEASANT BEACH BOROUGH	4	OCEAN	3875	4072	3953	4268	3939	-133	-0.24%
SEASIDE HEIGHTS BOROUGH	4	OCEAN	1309	1410	1555	1347	1310	-100	-0.52%
SEASIDE PARK BOROUGH	4	OCEAN	863	1082	1008	1513	1008	-74	-0.50%
SHIP BOTTOM BOROUGH	4	OCEAN	1131	1239	1166	1268	1166	-73	-0.43%
SOUTH TOMS RIVER BOROUGH	4	OCEAN	432	447	736	914	666	219	2.89%
STAFFORD TOWNSHIP	4	OCEAN	8086	8764	12298	14597	11897	3133	2.21%
SURF CITY BOROUGH	4	OCEAN	653	611	650	764	589	-22	-0.26%
TUCKERTON BOROUGH	4	OCEAN	1116	1127	1743	1301	1179	52	0.32%
BLOOMINGDALE BOROUGH	1	PASSAIC	1260	1335	1394	1815	1594	259	1.27%
CLIFTON CITY	1	PASSAIC	31141	31898	38669	34158	38659	6761	1.38%
HALEDON BOROUGH	1	PASSAIC	1542	1609	2169	2098	2315	706	2.63%
HAWTHORNE BOROUGH	1	PASSAIC	5723	5692	6817	6609	7500	1808	1.99%
LITTLE FALLS TOWNSHIP	1	PASSAIC	5605	5565	6506	6031	6770	1205	1.41%
NORTH HALEDON BOROUGH	1	PASSAIC	1588	1741	2118	2593	2662	921	3.08%
PASSAIC CITY	1	PASSAIC	19193	18272	20637	20072	22530	4258	1.51%
PATERSON CITY	1	PASSAIC	37872	38056	43296	39581	44556	6500	1.13%
POMPTON LAKES BOROUGH	1	PASSAIC	1986	2217	2443	2347	2650	433	1.28%
PROSPECT PARK BOROUGH	1	PASSAIC	1013	1133	1685	1294	1268	135	0.80%
RINGWOOD BOROUGH	1	PASSAIC	2297	2361	2317	2871	2317	-44	-0.13%
TOTOWA BOROUGH	1	PASSAIC	12169	12427	14989	13488	15073	2646	1.39%
WANAQUE BOROUGH	1	PASSAIC	2032	1941	2648	2591	2955	1014	3.05%
WAYNE TOWNSHIP	1	PASSAIC	36814	36892	41708	38754	44168	7276	1.29%
WEST MILFORD TOWNSHIP	1	PASSAIC	4652	4961	5358	5800	5358	397	0.55%
WEST PATERSON BOROUGH	1	PASSAIC	5214	5049	7050	7100	7793	2744	3.15%
ALLOWAY TOWNSHIP	6	SALEM	610	662	1033	1358	907	245	2.27%
CARNEYS POINT TOWNSHIP	6	SALEM	2055	2628	4614	5768	4048	1420	3.13%
ELMER BOROUGH	6	SALEM	1573	1652	1729	1877	1697	45	0.19%
ELSINBORO TOWNSHIP	6	SALEM	137	107	119	64	76	-31	-2.38%
LOWER	6	SALEM	992	661	748	419	470	-191	-2.41%

ALLOWAYS CREEK TOWNSHIP									
MANNINGTON TOWNSHIP	6	SALEM	971	922	1319	940	872	-50	-0.39%
OLDMANS TOWNSHIP	6	SALEM	693	836	897	633	582	-254	-2.55%
PENNS GROVE BOROUGH	6	SALEM	1141	1171	1346	1193	1133	-38	-0.24%
PENNSVILLE TOWNSHIP	6	SALEM	4278	3801	5319	4116	3960	159	0.29%
PILESGROVE TOWNSHIP	6	SALEM	1007	1068	1359	4810	1528	460	2.59%
PITTSGROVE TOWNSHIP	6	SALEM	2781	2912	3563	9074	3777	866	1.88%
QUINTON TOWNSHIP	6	SALEM	148	125	268	203	178	53	2.56%
SALEM CITY	6	SALEM	3151	3314	4086	3841	3370	56	0.12%
UPPER PITTSGROVE TOWNSHIP	6	SALEM	1010	1197	1730	2878	1518	321	1.71%
WOODSTOWN BOROUGH	6	SALEM	1690	1760	2214	2056	1804	44	0.18%
BEDMINSTER TOWNSHIP	3	SOMERSET	6776	7026	9527	9472	9540	2514	2.21%
BERNARDS TOWNSHIP	3	SOMERSET	10729	10144	14743	13284	13719	3575	2.18%
BERNARDSVILLE BOROUGH	3	SOMERSET	2972	3127	4603	4079	4108	981	1.97%
BOUND BROOK BOROUGH	3	SOMERSET	4140	4061	4135	4454	4226	165	0.28%
BRANCHBURG TOWNSHIP	3	SOMERSET	8110	8355	10195	12736	11277	2922	2.17%
BRIDGEWATER TOWNSHIP	3	SOMERSET	31557	33557	36652	41703	39973	6416	1.26%
FAR HILLS BOROUGH	3	SOMERSET	891	905	1245	978	985	80	0.61%
FRANKLIN TOWNSHIP	3	SOMERSET	31025	29971	39245	36323	36824	6853	1.48%
GREEN BROOK TOWNSHIP	3	SOMERSET	3695	3595	4144	5003	4352	757	1.37%
HILLSBOROUGH TOWNSHIP	3	SOMERSET	7531	8638	12160	14515	13251	4613	3.10%
MANVILLE BOROUGH	3	SOMERSET	2214	2285	2293	2897	2513	228	0.68%
MILLSTONE BOROUGH	3	SOMERSET	110	114	118	162	126	12	0.72%
MONTGOMERY TOWNSHIP	3	SOMERSET	9020	8928	9913	10341	10098	1170	0.88%
NORTH PLAINFIELD BOROUGH	3	SOMERSET	3770	3648	3808	3601	3767	119	0.23%
PEAPACK-GLADSTONE BOROUGH	3	SOMERSET	1417	1199	2138	1404	1460	261	1.42%
RARITAN BOROUGH	3	SOMERSET	9110	9161	11350	11906	11528	2367	1.66%
ROCKY HILL BOROUGH	3	SOMERSET	335	347	425	448	444	97	1.78%
SOMERVILLE BOROUGH	3	SOMERSET	14014	13381	14861	13860	14419	1038	0.54%
SOUTH BOUND BROOK BOROUGH	3	SOMERSET	497	593	445	434	456	-137	-1.86%

WARREN TOWNSHIP	3	SOMERSET	9618	9669	13015	15659	13015	3346	2.15%
WATCHUNG BOROUGH	3	SOMERSET	6012	5855	6489	6699	6604	749	0.86%
ANDOVER BOROUGH	1	SUSSEX	1528	1541	2165	2175	2227	686	2.67%
ANDOVER TOWNSHIP	1	SUSSEX	871	884	1467	1812	1616	732	4.40%
BRANCHVILLE BOROUGH	1	SUSSEX	1671	1716	1805	1942	1846	130	0.52%
BYRAM TOWNSHIP	1	SUSSEX	326	304	393	401	414	110	2.23%
FRANKFORD TOWNSHIP	1	SUSSEX	730	797	1127	993	1016	219	1.75%
FRANKLIN BOROUGH	1	SUSSEX	1301	1464	1927	1928	2044	580	2.41%
FREDON TOWNSHIP	1	SUSSEX	209	238	352	295	315	77	2.02%
GREEN TOWNSHIP	1	SUSSEX	212	236	364	374	373	137	3.32%
HAMBURG BOROUGH	1	SUSSEX	1063	1183	1520	1628	1650	467	2.41%
HAMPTON TOWNSHIP	1	SUSSEX	656	720	994	900	990	270	2.30%
HARDYSTON TOWNSHIP	1	SUSSEX	975	1124	2027	3212	2575	1451	6.10%
HOPATCONG BOROUGH	1	SUSSEX	1147	1196	1621	1543	1605	409	2.12%
LAFAYETTE TOWNSHIP	1	SUSSEX	1773	1973	2674	2767	2921	948	2.84%
MONTAGUE TOWNSHIP	1	SUSSEX	556	575	1119	1094	1119	544	4.87%
NEWTON TOWN	1	SUSSEX	8305	9126	10556	10824	11234	2108	1.50%
OGDENSBURG BOROUGH	1	SUSSEX	253	291	279	303	279	-12	-0.30%
SANDYSTON TOWNSHIP	1	SUSSEX	153	157	250	277	271	114	3.98%
SPARTA TOWNSHIP	1	SUSSEX	7045	8264	9234	17184	9234	970	0.80%
STANHOPE BOROUGH	1	SUSSEX	2281	2421	2634	3046	2944	523	1.41%
STILLWATER TOWNSHIP	1	SUSSEX	350	427	474	382	440	13	0.21%
SUSSEX BOROUGH	1	SUSSEX	2190	2308	2437	2218	2453	145	0.44%
VERNON TOWNSHIP	1	SUSSEX	3108	3528	5154	5069	5186	1658	2.79%
WALPACK TOWNSHIP	1	SUSSEX	97	102	106	567	106	5	0.31%
WANTAGE TOWNSHIP	1	SUSSEX	826	753	1424	1224	1252	499	3.70%
BERKELEY HEIGHTS TOWNSHIP	2	UNION	5297	5275	6462	6261	7542	2267	2.59%
CLARK TOWNSHIP	2	UNION	7479	7593	8480	9423	8696	1103	0.97%
CRANFORD TOWNSHIP	2	UNION	14232	12628	14621	15660	15920	3292	1.67%
ELIZABETH CITY	2	UNION	45486	45414	51159	48383	58953	13539	1.88%
FANWOOD BOROUGH	2	UNION	1624	1618	1666	1620	1757	140	0.59%
GARWOOD BOROUGH	2	UNION	2285	2272	2216	2095	2386	114	0.35%

HILLSIDE TOWNSHIP	2	UNION	6757	6069	6847	6225	7603	1534	1.62%
KENILWORTH BOROUGH	2	UNION	10701	10607	11830	13787	12072	1465	0.93%
LINDEN CITY	2	UNION	20424	19965	22025	19005	23211	3246	1.08%
MOUNTAINSIDE BOROUGH	2	UNION	5435	5690	5909	6578	5922	232	0.29%
NEW PROVIDENCE BOROUGH	2	UNION	9053	8095	8932	8139	9940	1845	1.48%
PLAINFIELD CITY	2	UNION	9813	9807	10238	9685	11109	1302	0.89%
RAHWAY CITY	2	UNION	13541	13192	14536	15222	15519	2327	1.17%
ROSELLE BOROUGH	2	UNION	3993	3877	4272	3724	4416	539	0.93%
ROSELLE PARK BOROUGH	2	UNION	2348	2372	2356	2166	2623	251	0.72%
SCOTCH PLAINS TOWNSHIP	2	UNION	5884	5821	5968	6527	6476	655	0.76%
SPRINGFIELD TOWNSHIP	2	UNION	10849	10742	12538	10845	13246	2504	1.51%
SUMMIT CITY	2	UNION	14108	13979	15366	14749	15729	1750	0.85%
UNION TOWNSHIP	2	UNION	35661	32434	33912	33151	40799	8365	1.65%
WESTFIELD TOWN	2	UNION	10608	10990	9714	9688	11632	642	0.41%
WINFIELD TOWNSHIP	2	UNION	107	112	128	164	159	47	2.53%
ALLAMUCHY TOWNSHIP	2	WARREN	343	356	447	407	408	52	0.98%
ALPHA BOROUGH	2	WARREN	516	569	775	782	774	205	2.22%
BELVIDERE TOWN	2	WARREN	2101	2106	2095	1826	1864	-242	-0.87%
BLAIRSTOWN TOWNSHIP	2	WARREN	1707	1751	2273	2409	2348	597	2.12%
FRANKLIN TOWNSHIP	2	WARREN	934	921	1626	2025	1819	898	4.98%
FRELINGHUYSEN TOWNSHIP	2	WARREN	236	250	349	377	354	104	2.52%
GREENWICH TOWNSHIP	2	WARREN	653	745	1078	1210	1123	378	2.97%
HACKETTSTOWN TOWN	2	WARREN	9168	9363	10335	11211	11213	1850	1.30%
HARDWICK TOWNSHIP	2	WARREN	76	80	112	444	233	154	7.98%
HARMONY TOWNSHIP	2	WARREN	218	234	301	235	238	4	0.12%
HOPE TOWNSHIP	2	WARREN	304	317	272	209	235	-82	-2.12%
INDEPENDENCE TOWNSHIP	2	WARREN	386	367	435	314	324	-43	-0.89%
KNOWLTON TOWNSHIP	2	WARREN	759	824	996	1046	1017	193	1.51%
LIBERTY TOWNSHIP	2	WARREN	553	555	618	705	647	92	1.10%
LOPATCONG TOWNSHIP	2	WARREN	1133	1044	1299	1068	1081	37	0.25%
MANSFIELD TOWNSHIP	2	WARREN	1006	1073	1504	1361	1359	286	1.70%
OXFORD TOWNSHIP	2	WARREN	360	362	523	490	489	127	2.17%
PHILLIPSBURG	2	WARREN	9054	9295	12076	12931	12652	3357	2.23%

TOWN									
POHATCONG TOWNSHIP	2	WARREN	1739	1948	2909	3971	2907	959	2.90%
WASHINGTON BOROUGH	2	WARREN	2268	2261	2433	2434	2471	210	0.64%
WASHINGTON TOWNSHIP	2	WARREN	1912	1842	2262	1578	1679	-163	-0.66%
WHITE TOWNSHIP	2	WARREN	751	814	978	758	770	-44	-0.40%
NEW JERSEY			3640016	3689688	4394382	4575277	4480153	790465	1.40%

Source: Econsult Corporation (2008)

NEW JERSEY COUNCIL ON AFFORDABLE HOUSING
TASK 2 – ESTIMATING THE DEGREE TO WHICH FILTERING IS A SECONDARY SOURCE OF AFFORDABLE HOUSING

Final Report Submitted To:
New Jersey Council on Affordable Housing
101 South Broad Street
Trenton NJ 08625

Final Report Submitted By:
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3600 Market Street 6th Floor
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FINAL REPORT – November 16, 2007

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EXECUTIVE SUMMARY

This presents a new approach to measuring the extent to which filtering has affected the supply of affordable housing for low-to-moderate (low-mod) households in New Jersey from 1993 through 2005 based on property-level data on home transactions in New Jersey from 1989 through 2005. It also provides a projection of filtering for the 2006 to 2018 period. Because new data and mapping techniques are now available, the approach differs significantly from the previous estimation of filtering.

1.0 PRIOR METHOD

From the 1989 and 1999 American Housing Survey, all sampled households that were identified as being in Metropolitan Statistical Areas[1] that were located (at least partially) in New Jersey were identified. The researchers compared reported household incomes in the two years, and classified households into two categories: "low-moderate income" and "middle-upper income". A unit that was occupied by a "low-mod" household in 1989, but became occupied by a "middle-upper" household in 1999 was classified as having "filtered up". Conversely, a unit that was occupied by a "middle-upper" household in 1989 but became occupied by a "low-mod" household in 1999 was classified as having "filtered down".

They then computed the percent of the AHS sample that both filtered up and filtered down. Because the research is only concerned with how filtering is a secondary source of affordable housing for low-mod households, they dropped filtered units that remained beyond the reach of affordability to these households. This effectively eliminates units from the sample that only filtered between relatively high-income households. These two modified filtering numbers were netted against each other to obtain the net filtering rate for the 1989-1999 period. They then applied this percent to the housing stock of NJ to determine the total number of units that filtered. Lastly, this number was multiplied times 1.5 to adjust the ten-year filtering number to the fifteen-year period of 1999-2014.

While the initial effort was state-of-the-art at the time that it was developed, there are limitations to the data and methods.

1) The American Housing Survey data has very limited spatial information.

   The American Housing Survey does not provide information on location of housing units by municipality. Thus filtering must be calculated on a metropolitan or statewide basis and allocated to municipalities. With the availability of housing sales data and GIS software, it is now possible to directly evaluate municipality filtering.

2) The American Housing Survey likely contains units not located in New Jersey.

   For South Jersey, the researchers used data from the Philadelphia MSA because it contains the NJ counties of Burlington, Camden, Gloucester and Salem. However, it also contains the (heavily-populated) PA counties of Bucks, Montgomery, Chester and Delaware. The presence of observations from these non-NJ counties can skew the results.

[1] Hereafter, MSAs. An MSA is a designation by the federal government that defines a metropolitan area as a center city and its surrounding suburbs. The geographic definition is typically contiguous with county boundaries.

3) The definition of a filtering event could be overly sensitive to small changes in income.

The researchers identified filtered units as those for which the reported income changed the household's eligibility status under Mt Laurel II income requirements. However, this method does not take into account the magnitude of the income change. In particular, households which were just above (below) the qualifying threshold in one period and were subsequently just below (above) the threshold in the next period would qualify as being a filtered unit. However, filtered units are typically associated with entire neighborhoods either gentrifying upwards or falling into distress, as existing households are replaced by entirely different ones. Hence, the method may over-identify the number of filtered units.

4) Data from the last five years suggest that the 1989-1999 period examined captured only part of the housing market cycle.

After measuring the rate of filtering from 1989-1999, the researchers multiplied this number times 1.5 to generate a 5-year-ahead forecast. However, the years 1989-1999 were generally a down period for New Jersey's (and the Nation's) housing market, when volume was low and prices were declining-to-flat. Following 2000, the market experienced an unprecedented boom, with both volume and price appreciation experiencing double-digit growth.

This has especially critical implications for the research because the dynamics of filtering co-vary across the housing cycle. Down-markets are associated with disproportionate amounts of downward filtering, while up-markets are conversely associated with different amounts of upward filtering. If the analysis focuses only on the down-market periods then downward filtering is likely to be overstated in the future; similarly, if the analysis were to focus only on the boom part of the cycle, downward filtering would be understated. The current analysis has the benefit of covering the entire housing cycle.

2.0 PREVIOUS RESEARCH

The theory of downward filtering as a source of low-cost housing is nested within a larger body of research that views housing as a *durable good*: it is relatively challenging to supply, possesses a long life once constructed, and consequently, it is rarely in a steady equilibrium where supply equals demand and prices are stable. Because of these aforementioned factors, the housing market is prone to cyclical behavior, with the lifecycle of buildings being correlated with the overall evolution of real estate cycles: as prices rise relative to construction costs, developers will build new housing, and existing units will subsequently filter down and become more affordable for low-income households to occupy. Conversely, in markets that are more supply constrained, owners and landlords have an incentive to invest in and upgrade existing units for occupancy by higher-income households; a process characterized as "upward filtering". The existence of the general filtering process is well documented in existing research: Sweeney 1974; Rothenberg et al. 1991; O'Flaherty 1995, 1996.

However, a more recent body of research has yielded additional insights into how the dynamics of filtering are affected by the fundamental conditions of the local housing market. This research has linked filtering outcomes to the underlying market and policy inputs that govern the operation of housing markets. By characterizing not only to what extent filtering can (or cannot) take place, this literature also describes under what conditions the filtering process is more likely to be upwards v. downwards. As such, this research provides useful insight into what variables can most likely explain the future level and direction of filtering in New Jersey.[2]

Nelson, *et al.*, (1998) measures the extent of filtering with data from the American Housing Survey in 41 metropolitan areas. The authors use paired observations to track individual housing units twice at four-year intervals from 1985 to 1992. Changes in the local housing stock are measured through additions from new construction, subtractions from demolition, changes in the tenure of households, and changes in rent levels as existing units change occupancy between different households. This last category provides the extent of filtering.

By measuring the degree of filtering in the presence of other housing activity, the authors provide insights into how filtering is affected by the amounts of new construction, demolition and household mobility in a local market. Based upon how filtering is affected by these aforementioned factors, the authors group the 41 metropolitan markets into six categories:

- Booming/Gaining (high rate of construction and gain in affordable units);
- Booming/Some Loss (high rate of construction and some loss of affordable units);
- Booming/High Loss (high rate of construction and substantial loss of affordable units);
- Low Growth/Gaining (low rate of construction and gain in affordable units);
- Low Growth/Some Loss (low rate of construction and some loss of affordable units); and

[2] A full bibliography can be found in Appendix A.

- Low Growth/High Loss (low rate of construction and substantial loss of affordable units).

The central findings of Nelson, *et al.* regarding filtering are threefold:

1) Markets which experienced significant growth in the stock of affordable housing[3] via the process of downward filtering are characterized by a relatively elastic supply of housing, a declining population, or both.

2) Markets in which the number of affordable units declined and/or upward filtering occurred are characterized by a relatively inelastic supply of housing.[4]

3) Regardless of which category a market is in, very low-rent housing units are more likely to filter up than down.

The authors then use these results to draw some implications for housing policy. For example, in supply-elastic markets, demand-side housing vouchers would seem to be a relatively better policy to induce growth in the stock of affordable housing, whereas supply-side production subsidies would be a more effective choice in supply-inelastic markets.

Sinai and Waldfogel (2002) examine whether the subsidized production of housing crowds out private production (or maintenance) of housing, which has implications for filtering. Using 1990 Census data, the authors find that there is at least partial crowding out of private housing by public (or publicly-subsidized) housing. On the face of it, this would seem to indicate that regions with significant amounts of public or publicly-subsidized housing would have less downward filtering, as low-income households would live in these units rather than in filtered units. However, the authors only examine how this crowding out affects the total housing stock, and not the affordable housing stock.[5] This has two implications. First, if the crowding out that occurs does not displace affordable units directly, its impact on downward filtering is likely to be minimal. Secondly, if the housing units that are displaced are not affordable, and these displaced units would not have filtered anyway, then the effect on downward filtering is also likely to be minimal.

Somerville and Mayer (2003) make the connection between filtering and supply elasticity more explicit by tying it to regulation. Like Nelson et al (1998), the authors used AHS data on matched pairs of individual units at two points in time to track the movement of units into and out of the affordable housing stock. The authors define a number of variables that characterize the degree of local land-use regulation, and then use these variables to examine how restrictions on new construction affect the probability that a unit will filter.

[3] Affordable units are defined as private market, unsubsidized rental units affordable to households with incomes at or below 50 percent of HAMFI.

[4] These "upward filtering" markets included: Anaheim, Boston, Los Angeles, New York, San Francisco, and Washington, DC.

[5] Another problem with this study is that it implicitly assumes that housing markets in the data are in equilibrium. Since an equilibrium market would have no filtering occurring in it, this study is limited in its implications for the effects of subsidized housing on filtering.

The authors find that restrictive regulations on the supply of new units in *any* segment of the market will lower the total supply of affordable units.[6] This occurs because the restriction in new supply raises the return to landlords from investing in (i.e. upgrading and improving) the quality of their existing units. These improvements are subsequently capitalized into a higher price, which decreases affordability and promotes upward filtering.

The central result of Somerville and Mayer's (2003) paper is that decreased supply elasticity—whether natural or synthetic—promotes upward filtering of the housing stock. But among other results, the authors also find that upward (downward) filtering is negatively (positively) associated with the age of the rental housing stock, negatively (positively) associated with how affordable a unit is, and positively (negatively) associated with the level of local incomes and rents. These results are consistent with Nelson et al. (1998), and both papers share the same general prediction that markets with a low supply elasticity of housing will see increasing spatial concentration of affordable housing into fewer neighborhoods, and decreasing income and rent diversity in relatively well-off neighborhoods. The natural policy implication is that any benefits of regulation must be contrasted with the decreased affordability and access to homeownership they are likely to cost.

Other studies examining the effects of housing policy on filtering corroborate the results of these previous studies. Mullin and Gillen (2006) examine the effect of HUD's HOPE VI program on the values of privately owned homes in affected neighborhoods. Employing an event-study methodology to examine trends in house values near public housing projects in Philadelphia in the 1990s and 2000s, the authors examined what effect the demolition of the housing projects and the subsequent redevelopment of the sites to scattered-site single-family housing have on the values of nearby homes. They find that home values near public housing projects were depressed relative to comparable homes throughout the city, but these same homes experienced above-market appreciation following the demolition and redevelopment of these sites.

By contrast, Gillen (2007) examines what happens to property values in those neighborhoods to which the former public housing residents relocate. Merging home sales data with lease-level data on Section 8 vouchers in Philadelphia during the same period, the author examines the level and trend in both house prices and housing turnover in neighborhoods that attract Section 8 households. He finds that price declines and housing turnover in those neighborhoods exceed the baseline citywide averages during the 1990-2000 period. In summary, then, the elimination of traditional public housing projects is associated with upward filtering of the local housing stock, while the introduction of additional voucher households is associated with downward filtering of the local housing stock.

In contrast to these studies, Rosenthal (2006) takes a much longer view of the filtering process. The author uses Census Tract data from 1950 to 1990 for 29 MSAs along with data from 1900 to 1990 for Philadelphia. Like the previous studies, the author finds significant mobility of housing units as part of the cycle of decline and renewal that characterizes U.S. urban neighborhoods. Moreover, this mobility provides additional empirical confirmation of both types of filtering, because it finds that housing units change hands from higher income households to lower-income households and vice versa. A more specific result is that

[6] "Affordable Rental Units" are defined as those with gross rents less than or equal to 30 percent of household income for a household with 35 percent of the median MSA household income.

neighborhood income exhibits greater volatility than MSA median income, changing about 12 percent per decade relative to MSA median income.

The literature finds that both the extent and type of filtering is affected by a number of factors, both demographic/socioeconomic as well as the prevalence and degree of the type of housing policies that prevail. Moreover, some factors are highly local (affecting neighborhoods) while others are more global (affecting regional markets), and may even be working in opposite directions. In summary, the literature finds that:

> Downward filtering is associated with:
>
> Low construction costs, high maintenance/improvement costs, elastic supply of new units, low regulation, low public subsidies/provision of new housing, low population growth and/or low household formation (esp. among high-income households), declining rents, age of the housing stock, relative affordability of housing, low neighborhood income and rents, lack of publicly-provided or subsidized housing, local presence of Section 8 households.

> Upward filtering is associated with:
>
> High construction costs, low maintenance/improvement costs, inelastic supply of new units, high regulation, high population growth and/or high household formation (esp. among high-income households), rising rents, youth of the housing stock, relative unaffordability of housing, high neighborhood income and rents, lack of publicly-provided or subsidized housing, global presence of Section 8 households, housing is in the lowest rent category and local elimination of public housing.

These findings from the literature are able to serve as useful factors in estimating our own model of filtering in NJ; a subject to which we now turn.

3.0 ECONSULT'S METHOD

Our method identifies a filtered housing unit as one that has experienced both a significant price change and significant income change in the occupying household. Using comprehensive property-level data on all paired (and cleaned) home transactions in NJ from 1989-2006, the appreciation rate of each unit is compared to the market appreciation rate of the COAH Region in which the unit is located. If the unit's appreciation rate exceeds the Region's appreciation rate by a significant margin (i.e. 1 std. dev.), it is classified as having "Appreciated". If the unit's appreciation rate lags the Region's appreciation rate by a significant margin (i.e. 1 std. dev.), it is classified as having "Depreciated". We then perform a similar classification for changes in household income. If the tract's change in median income exceeds the statewide increase in median income by a significant percentage margin (i.e. 1 std. dev.), the unit is classified as having "Increased" in income, and vice-versa if the tract's percentage change in income significantly lags the statewide change. If a unit has both "Appreciated" in value and "Increased" in income, it is classified as having "Filtered Up". If a unit has "Depreciated" in value and "Decreased" in income, it is classified as having "Filtered Down".

Because we only care about how low-mod income households are affected by filtering, we then delete those units that filtered only between high-income households in high-priced areas, using COAH's income guidelines. The remaining number of units that have filtered are then summed, converted to percents, and then applied to the housing stock of NJ to obtain the total filtering number.

Note that this method attempts to directly address the limitations identified in the previous method. First, the scope of the data is limited to NJ. Secondly, the data provides comprehensive and detailed geographic coverage of the NJ market. Thirdly, the definition of filtering is a more stringent one because it requires a <u>significant</u> change in <u>both</u> a unit's value <u>and</u> the unit's household income. Lastly, because the data covers the entire 1989-2005 period, it captures a full revolution of the housing cycle, and hence yields a more fully identified model of filtering dynamics. The only shortcoming of this approach relative to the previous method is that household income is observed only at the tract level, and not at the individual household level. However, considering that inter-tract variation in income is far greater than its counterpart of intra-tract variation, we believe that this is only a very minor shortcoming, and one that is more than offset by all of the aforementioned advantages.

Here are the results. The different methodological approaches are compared in the two columns (see Figure 3.1):

Figure 3.1 – Filtering Results, 1989-2005

		Rutgers Method	*Econsult Method*
(1)	Sample Size	1,964,046	457,910
(2)	# Units Filtered Up	296,716	21,993
(3)	% Units Filtered Up	15.11%	4.8%
(4)	# Units Filtered Down	334,282	8,773
(5)	% Units Filtered Down	17.02%	1.92%
(6)	Net # Units Filtered Down	37,566	-13,220
(7)	Net % Units Filtered Down	1.91%	-2.89%
(8)	# Filtered Units in Upper End of the Market	96,941	23,911
(9)	# Units Filtered Up	N/A	1,772
(10)	% Units Filtered Up	N/A	0.41%
(11)	# Units Filtered Down	39,438	5,083
(12)	% Units Filtered Down	2.20%	1.18%
(13)	Net # Units Filtered Down	N/A	3,311
(14)	Net % Units Filtered Down	N/A	0.78%
(15)	Housing Stock of NJ in 2005	3,443,981	3,443,981
(16)	Total Net Units that Downward Filtered Statewide 1989-2005	+59,156	+26,744

Source: Econsult Corporation (2007)

After cleaning and geo-coding the data, our working sample of paired transactions numbers 457,910, as indicated in line (1). Applying the filtering criterion yields 21,993 units that filtered up (2) and 8,773 units that filtered down (4). Dividing (2) and (4) into (1) yields gross, statewide filtering rates of 4.8 percent (3) for upward filtering and 1.92 percent for downward filtering.

The next critical step is to drop those units that filtered, but still remain out of the reach of low-moderate income households. Applying the qualifying income criterion supplied by COAH,[7] this results in the deletion of 23,911 paired transactions from the sample. These are mostly units that began as relatively high-priced dwellings in relatively high-income neighborhoods, and finished as even higher-priced dwellings in even higher-income neighborhoods. The majority of these units were identified as having filtered upward. They were deleted from the sample because they never met the guidelines of affordability to begin with: although they meet our definition of "filtered", they filtered only between relatively high-income households and/or in high-priced localities.

Having dropped these units from the sample, the filtering numbers are re-computed in steps (9)-(14). Item (10) reports that .41 percent of the sample filtered up out of the range of low-mod households, while item (12) reports that 1.18 percent of the sample filtered down. Note that the deletion of the upper-end of the housing stock results in a rate of downward filtering that now exceeds the rate of upward filtering. Consequently, the net rate of downward filtering is now 0.78 percent. Multiplying this number by the total housing stock of NJ in 2005 implies there was a net gain of 26,744 affordable housing units as a result of net downward filtering during this period.[8]

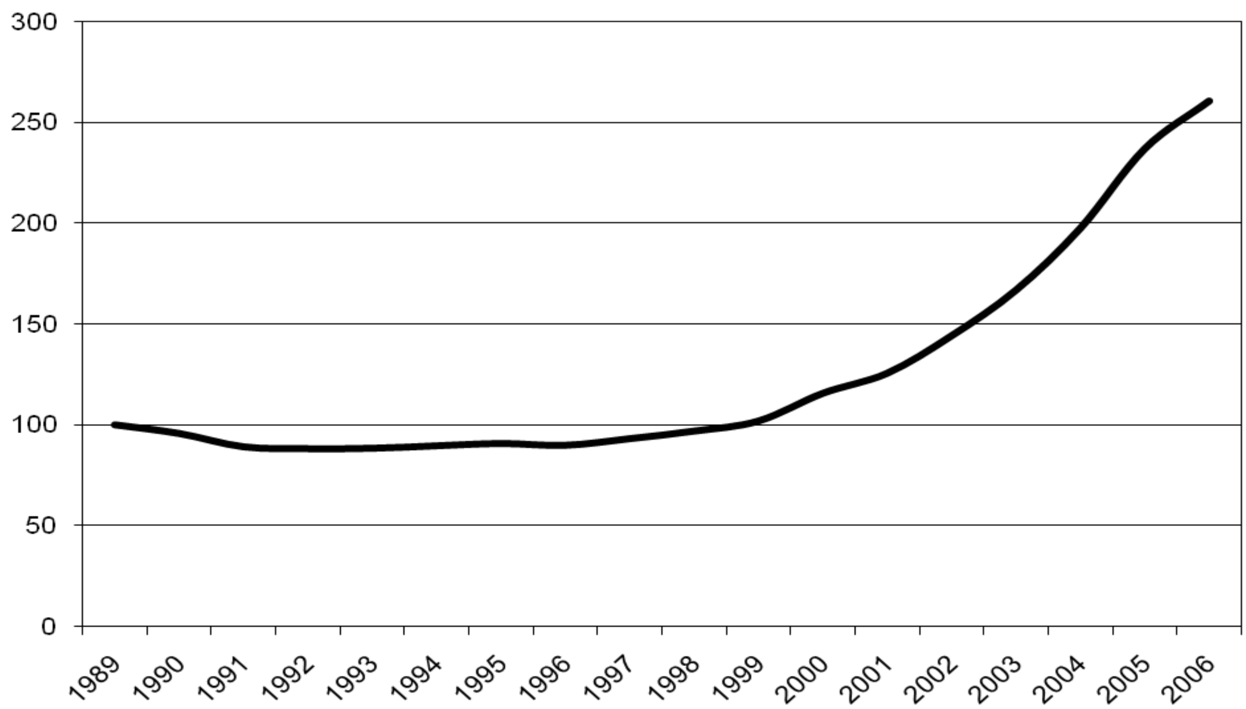
[7] COAH provided its income limit guidelines for the years 1990 through 2006. Based upon the year each dwelling transacted, we applied that year's income limit guideline.

[8] Note: some rounding is involved. Also, because we multiply the filtering rate times the total stock of housing units, this procedure implicitly picks up rental units (which didn't transact) but nonetheless may have filtered downward to be occupied by lower-income tenants.

4.0 MARKET APPRECIATION

This number is roughly half of what is reported by Rutgers because our period included the up-years of 2000-2006, when upward filtering dominated the sample. Although this time period is half of the previous period, the magnitude of the price appreciation that occurred far exceeded that of the price depreciation of the early 1990s. To characterize the magnitude of the market's appreciation, we estimated WRS house price indices using our population of paired transactions. The results are plotted in Figure 4.1:

Figure 4.1 – New Jersey House Price Index, 1989-2006



Source: Econsult Corporation (2007)

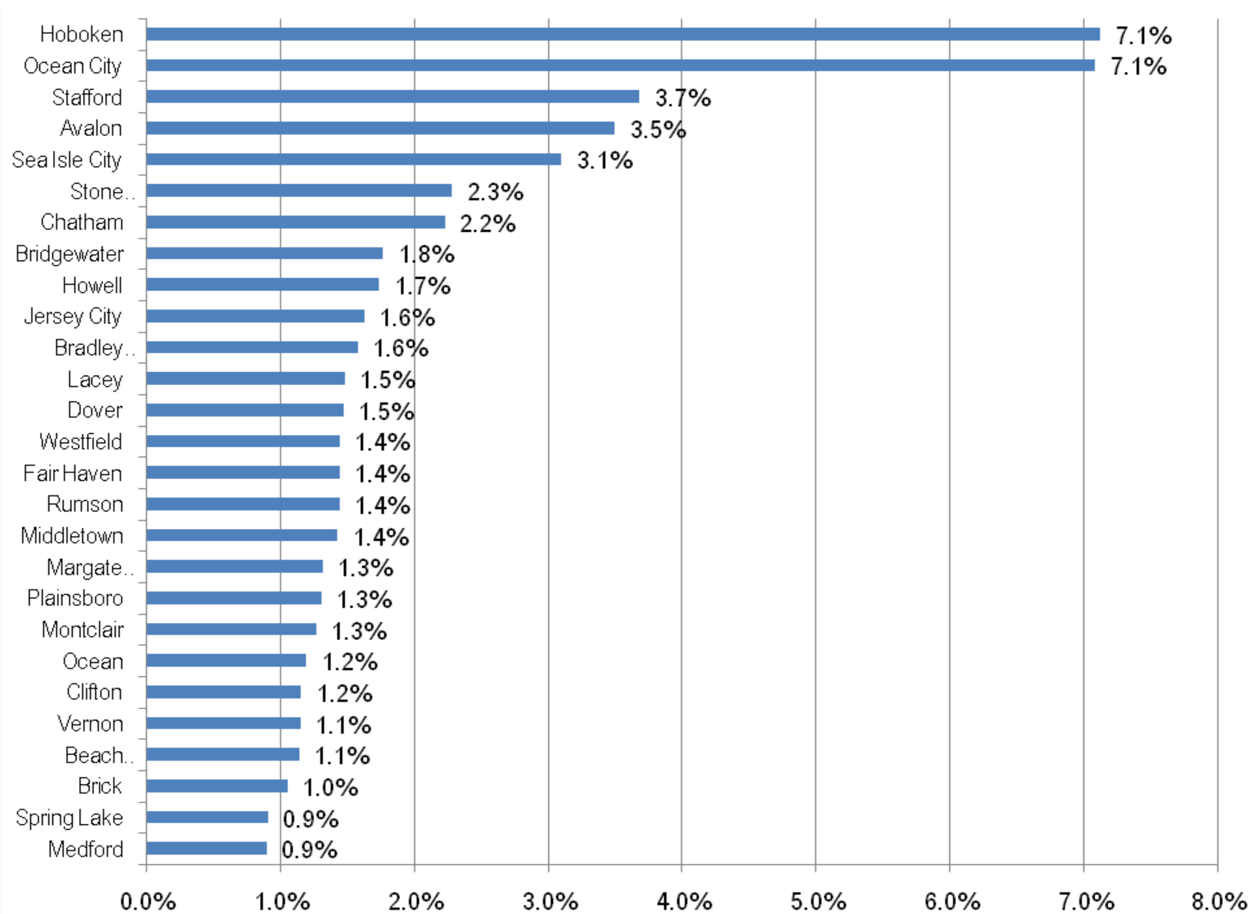
From a baseline value of 100 in 1989, the index fell by more than 10 percent until bottoming out in 1996. By 1999, the index had recovered against these losses. However, after 2001, the index appreciated by 156 percent over the next five years. This implies that the average New Jersey dwelling appreciated by the same amount during this same period. Therefore, Econsult has covered a full revolution of the housing cycle.

5.0 DELETION OF UNAFFORDABLE UNITS

Despite the magnitude of this price appreciation, its effect on statewide filtering is not uniform. The deletion of unaffordable units supports this point. Prior to their deletion, net filtering is in the upward direction. Following to their deletion, this result is reversed, and net filtering is downward. This implies an interesting result: **while overall statewide filtering may have been upward, it was overwhelmingly concentrated in the upper end of the housing market during this period.** That is, most filtering that occurred was housing units in high-priced markets becoming ever higher-priced, and occupied by ever higher-income households.

To examine if this is true or not, we generated a frequency count of these high-priced units by city, and ranked them according to the number of transactions that occurred. The cities that contain these deleted transactions are shown in Figure 5.1:

Figure 5.1 – Deleted Unaffordable Transactions, by City



Source: Econsult Corporation (2007)

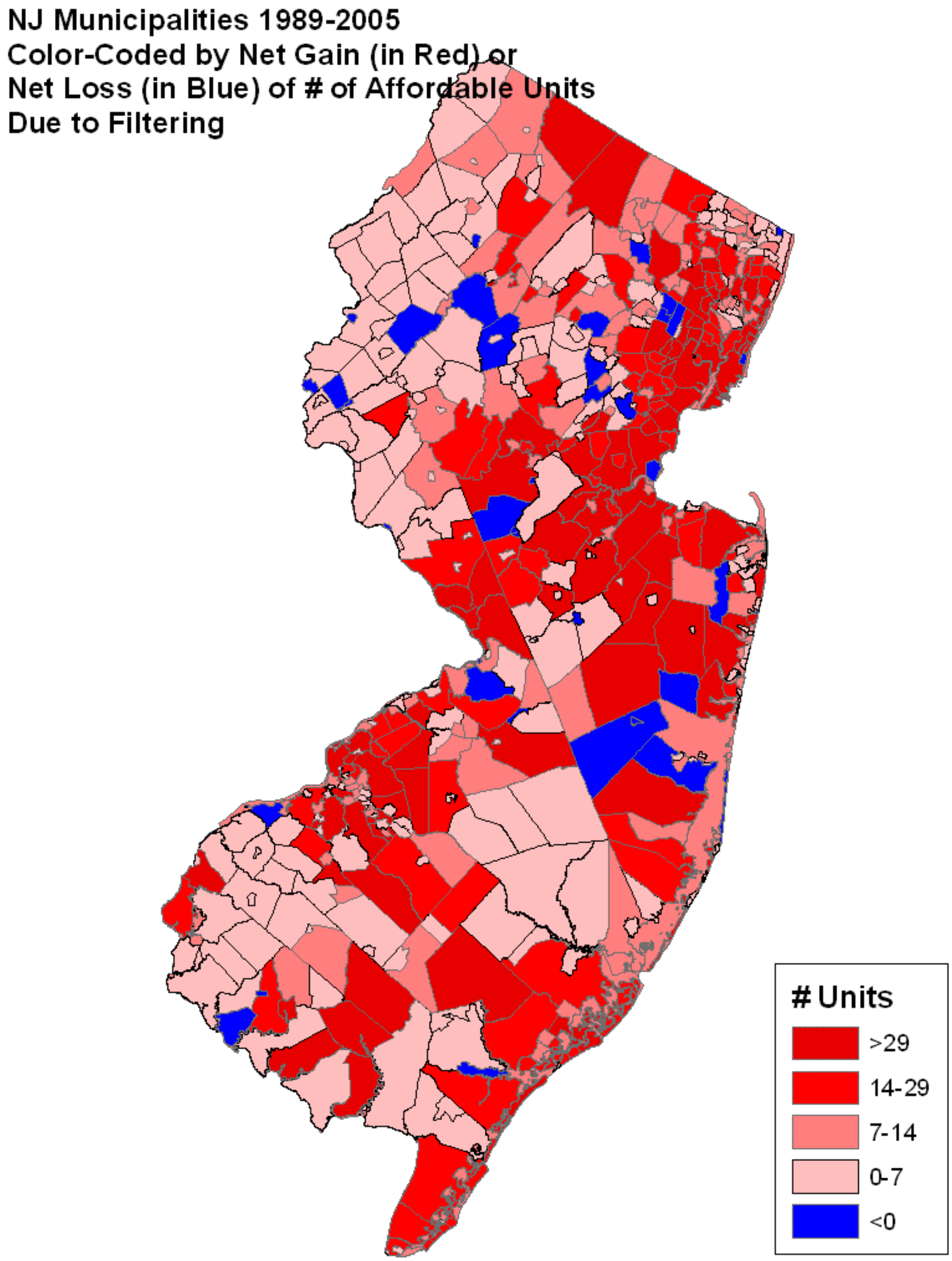
The chart seems to bear this result out. Just two markets (Hoboken, Ocean City) account for nearly 15 percent of all deleted transactions. In general, the deleted observations fall into three types of markets: older-yet- gentrifying urban cores (Hoboken, Jersey City), affluent Jersey suburbs (Montclair, Chatham, Westfield, Medford, Middletown) and resort Shore markets (Ocean City, Avalon, Stone Harbor). The initial unaffordability of these markets, combined with their above-market rates of appreciation, disqualified them from any analysis of filtering as a supply of affordable housing. Consequently, the deletion of these high-priced units from the analysis leads to the result that net filtering in the affordable segment of the market saw an expansion of that housing supply—however modest—despite the remarkable overall appreciation rates during those years.

6.0 GEOGRAPHIC VARIATION IN NET FILTERING

To provide further support to this result, we examine the geographic variation in net filtering, both pre- and post-omission of these units from the sample. First, we note that their deletion is appropriate in that this study is only interested the dynamics of filtering, *as it pertains to the supply of affordable housing*. These deleted units weren't in the realm of affordability to begin with, and only became less so during the course of the 1989-2005 period (esp. post-2000). Computing the filtering rate ex post their deletion is the net filtering rate *for affordable housing only*. These observations have been deleted from both the numerator (filtered units) and the denominator (all units that transacted).

We begin by looking at each municipality's net filtering rate, using the full population of all transactions. This is computed as the net number of units that filtered downward: total downward filtering units minus total upward filtering units. This ratio is computed for each municipality, based upon the address of each transacted property. A positive ratio implies a net gain to affordable housing from downward filtering, while a negative ratio implies a net loss to affordable housing from upward filtering. Municipalities, which experienced a net gain, are colored red, while municipalities that experienced a net loss are colored blue (see Figure 6.1).

Figure 6.1 - Net Gains/Losses from Filtering by Municipality, All Units



Source: Econsult Corporation (2007)

As the map indicates, most municipalities experienced a new upward gain in affordable housing units due to downward filtering during the 1989-2005 period. Part of this is because the downward cycle in house prices during 1989-1995 moved a lot of units into the realm of affordability. Another reason is that the boom of 1998-2005 saw a lot of new construction that let existing, older units filter down. But another reason is simply mathematical: because the net filtering numbers omits those units that are unaffordable, even very high-priced jurisdictions see a net gain in downward filtering. For example, the Jersey Shore communities experienced net upward filtering during the 2000-2005 boom period, which saw shore property values increase by double-digit percents annually. However, because this housing stock was unaffordable to low-moderate income households to begin with, the majority of these units are omitted from this analysis. Hence, even high-priced communities can experience some net gains from downward filtering when the high-priced segment of their housing stock is deleted from the sample.

Areas that experienced the largest net losses of affordable housing include Hoboken (-921 units), Manchester Township (-790), Perth Amboy (-669) and Montclair Township (-404). At the other end of the spectrum, the areas which experienced the largest gains in affordable housing units due to net downward filtering are generally the older, urban population centers of the state, including: Jersey City (+2,597 units), Camden (+2,249), Paterson (+2,042), Union (+1,881), Newark (+1,487), Asbury Park (+978) and Trenton (+526).

Hence, these maps provide further empirical support to the result that, for low-to-moderate income markets, filtering was a <u>net</u> positive source of affordable housing from 1989-2005.

7.0 FINAL COMPARISON

As a final check for our method, we now replicate our results for just the 1989-1999 period, and compare it to Rutgers'. This eliminates the effects of the post-2000 boom, and also facilitates an apples-to-apples comparison of methods (see Figure 7.1):

Figure 7.1 – Filtering Results, 1989-1999

	Rutgers	*Method 2*
Sample Size	1,964,046	121,177
# Filtered Units in Upper End of the Market	96,941	8,148
# Units Filtered Up	N/A	380
% Units Filtered Up	N/A	0.34%
# Units Filtered Down	39,438	849
% Units Filtered Down	2.20%	0.75%
Net # Units Filtered Down		469
Net % Units Filtered Down		0.42%
Applicable Housing Stock[9]	1,792,465	3,310,275
Total Net Units that Downward Filtered Statewide 1989-1999	+39,438	+13,979

Source: Econsult Corporation (2007)

Both methods agree that there was net downward filtering and subsequent expansion of the stock of affordable housing. This is consistent with the fact that the years 1989-1999 were a down-to-flat market. However, our approach obtains a significantly smaller number. This is likely for two reasons. First, Rutgers included out-of-state housing units in its sample. Second, our eligibility to be considered a filtered unit is more rigorous, as it requires both significant income and price change events.

[9] Rutgers multiplies their filtering rate times the "estimated middle/upper income non-deteriorated units in New Jersey 1999" to obtain the number of filtered units. We obtain our filtering number by multiplying the filtering rate times the housing stock of New Jersey in 2000 (Source: U.S. Census).

As a final check, we compare our numbers for the 1993-1999 Second Round Need Period. Rutgers estimated a gain of 20,184 units, whereas Econsult estimates 7,710. This fractional difference of 38 percent is very close to the 35 percent fractional difference reported in Table 2 for the 1989-1999 period, so the consistency of Econsult's method seems stable.[10]

[10] Municipal-level numbers can be found in Appendix B.

8.0 MODELING AND FORECASTING FILTERING

The next step in our analysis is to forecast filtering for the 2006-2018 period. We do this by first developing a model of filtering, and then apply this model to current data in order to generate forward forecasts. The model specification is a multinomial logit regression, where the dependent variable is the probability that a housing unit filters up, filters down, or does neither. It is similar to that of Somerville and Mayer (2003), but draws more extensively from the results of filtering literature reviewed earlier in this document. Each paired transaction is assigned a filtering status based upon its relative change in price and relative change in its Tract income between transactions. The baseline outcome of the model is the probability of not filtering, so the estimated coefficients measure the probability of either filtering up or down, given a unit change in the independent variables.

The model is specified as follows. For each housing unit, the unit will undergo one of three possible outcomes (o_i, i=1,2,3) from the set of all outcomes O, conditional upon a set of factors F:

$$\Pr ob(o_i \mid F) = \frac{e^{x_i \beta}}{\sum_{j=1}^{3} e^{x_j \beta}} \qquad (1)$$

The independent variables used in the estimation were chosen based upon the findings of the filtering literature. They are listed and defined in Figure 8.1:

Figure 8.1 - Independent Variables for Multinomial Logit Model of Filtering

Variable	*Definition*	*Source*
Pct_Blt	Municipality Percent "Built Out"	Econsult Task 1 work
HDensity	Density of Municipality's Housing Stock	US Census
City_Size	City Size, Based upon Size of Housing Stock	US Census
Cycle	Stage of the Housing Cycle: Up, Down, or Flat	NJ House Price Index
Growth	% Change in City's Housing Stock 1990-2002	US Census
HIncome	Avg. Household Income	US Census
Region	COAH Region fixed effect	NJ COAH

Source: Econsult Corporation (2007)

For home sales occurring in the inter-decennial years, linear interpolations of the variables will be used. Since most of the Census variables are demographic or socioeconomic (e.g. population, income), and that such variables are very persistent and have low inter-temporal volatility at short horizons, we believe that simple interpolations are appropriate. Also, because multinomial logit models are very computationally complicated to estimate with large datasets, the model was estimated by collapsing the property-level data down into synthetic pools, based upon categorical classifications of the independent variables enumerated in Figure 8.1. The number of transactions in each pool is then used as a weight in the estimation of the model.

The model is estimated using data for the years 1990-2005. Interaction terms of the variables in Figure 8.1 were also added to the specification. Since multinomial logit regression results can be awkward to directly interpret, the coefficients are then exponentiated relative to the baseline outcome to compute the relative probabilities of filtering up or down, given changes in the independent variables. As an integrity check, we first perform a series of two-way regressions, regressing the percent of units that filtered in each municipality on each of the individual variables in Figure 8.1. The results are presented in Figure 8.2.

Figure 8.2 - Multinomial Logit Regression Results

Parameter	*Value 1*	*Value 2*	*Filter Status*	*Estimate*	*Pr > ChiSq*
Intercept			Up	-2.941	<.0001
Intercept			Down	-4.352	<.0001
pct_blt	Built Out		Up	0.342	<.0001
pct_blt	Built Out		Down	-0.1442	<.0001
pct_blt	Underbuilt		Up	-0.1526	<.0001
pct_blt	Underbuilt		Down	0.6357	<.0001
hdensity	High		Up	0.4081	<.0001
hdensity	High		Down	0.9064	<.0001
hdensity	Low		Up	-0.1132	<.0001
hdensity	Low		Down	-0.9313	<.0001
city_size	Large		Up	-0.152	<.0001
city_size	Large		Down	0.3511	<.0001
city_size	Medium		Up	0.3592	<.0001
city_size	Medium		Down	-0.3583	<.0001
cycle	Up		Up	-0.2843	<.0001
cycle	Up		Down	-0.0693	0.0005

Parameter	*Value 1*	*Value 2*	*Filter Status*	*Estimate*	*Pr > ChiSq*
cycle	Down		Up	0.2908	<.0001
cycle	Down		Down	0.1451	<.0001
growth	Low		Up	-0.4505	<.0001
growth	Low		Down	0.2143	<.0001
growth	High		Up	-0.2223	<.0001
growth	High		Down	-0.3961	<.0001
hincome	High		Up	1.029	<.0001
hincome	High		Down	-0.399	<.0001
hincome	Low		Up	-0.9025	<.0001
hincome	Low		Down	0.9739	<.0001
pct_blt*hincome	Built Out	High	Up	0.5388	<.0001
pct_blt*hincome	Built Out	High	Down	0.648	<.0001
pct_blt*hincome	Built Out	Low	Up	-0.5295	<.0001
pct_blt*hincome	Built Out	Low	Down	-0.487	<.0001
pct_blt*hincome	Underbuilt	High	Up	-0.6479	<.0001
pct_blt*hincome	Underbuilt	High	Down	0.1112	0.0119
pct_blt*hincome	Underbuilt	Low	Up	0.5052	<.0001
pct_blt*hincome	Underbuilt	Low	Down	-0.0376	0.2335
cycle*growth	Up	Low	Up	0.0404	0.0237
cycle*growth	Up	Low	Down	0.2298	<.0001
cycle*growth	Up	High	Up	0.1118	<.0001
cycle*growth	Up	High	Down	-0.18	<.0001
cycle*growth	Down	Low	Up	-0.0451	0.0837
cycle*growth	Down	Low	Down	-0.4049	<.0001
cycle*growth	Down	High	Up	-0.0991	<.0001
cycle*growth	Down	High	Down	0.377	<.0001
city_size*growth	Large	Low	Up	0.7003	<.0001

Parameter	*Value 1*	*Value 2*	*Filter Status*	*Estimate*	*Pr > ChiSq*
city_size*growth	Large	Low	Down	-0.2663	<.0001
city_size*growth	Large	High	Up	-0.7669	<.0001
city_size*growth	Large	High	Down	0.6585	<.0001
city_size*growth	Medium	Low	Up	-0.7117	<.0001
city_size*growth	Medium	Low	Down	0.8603	<.0001
city_size*growth	Medium	High	Up	0.1707	<.0001
city_size*growth	Medium	High	Down	-1.1465	<.0001
region	1		Up	-0.7896	<.0001
region	1		Down	0.2694	<.0001
region	2		Up	-0.3416	<.0001
region	2		Down	-0.3274	<.0001
region	3		Up	-0.2997	<.0001
region	3		Down	-0.7289	<.0001
region	4		Up	0.8343	<.0001
region	4		Down	-0.0793	0.0076
region	5		Up	-0.0398	0.1144
region	5		Down	0.0979	0.0007

Source: Econsult Corporation (2007)

The regression output is large because there is a separate coefficient estimated for each categorical permutation of the variables. Moreover, the interpretation of the coefficients is especially complicated because they measure the log odds of the marginal probability of filtering, relative to the omitted category. However, one interpretation is fairly straightforward and intuitive: a large value of a coefficient is typically interpreted as a greater effect that variable has on the probability of filtering. And, very small p-values (say, less than 0.10) indicate that variable is a (statistically) significant factor in predicting that a housing unit will filter.

To illustrate, consider the first variable in the model, pct_blt. Based upon the univariate distribution of this variable across municipalities, each city is classified into one of three categories: "Built Out" if the municipality is more than one standard deviation from the statewide mean, "Underbuilt" if the municipality is less than one standard deviation from the statewide mean, and "Average" if otherwise. The regression measures the (log odds of the) probability of filtering, if a municipality is "Built Out" or "Underbuilt", and not "Average". For example, in row three of the table, the estimated coefficient measures what effect that being "Built Out" has on the probability that a significant percent of the housing stock will filter up. The value of the coefficient is 0.342, with a p-value of less than 0.0001. This indicates that being built out has a positive and significant effect on the probability that a municipality's housing stock will filter up. This result is supported by the literature, since a low elasticity of housing supply increases the returns to investing in and upgrading the existing housing stock, thus increasing its value and decreasing its affordability to low-moderate income households. Conversely, the effect of being "Underbuilt" has a positive and significant effect on the probability of downward filtering (coefficient of 0.6357 with p-value less than 0.0001). This indicates that relatively underbuilt municipalities have a greater future probability of downward filtering. This result is also supported by the literature, since a greater supply elasticity of housing allows existing units to more easily filter down as higher-income households move into future new housing, which usually has a higher value than older, existing housing.

In general, the regression results are consistent with, and supported by, the academic literature. A significantly greater probability of downward filtering is associated with: being underbuilt, having a high-density housing stock, being a large city, being in the down part of the housing cycle, being a low-income municipality, being a low-growth city, being a medium-sized but low-growth city, and by past levels of filtering (which is measured by the COAH regional fixed effects).[11]

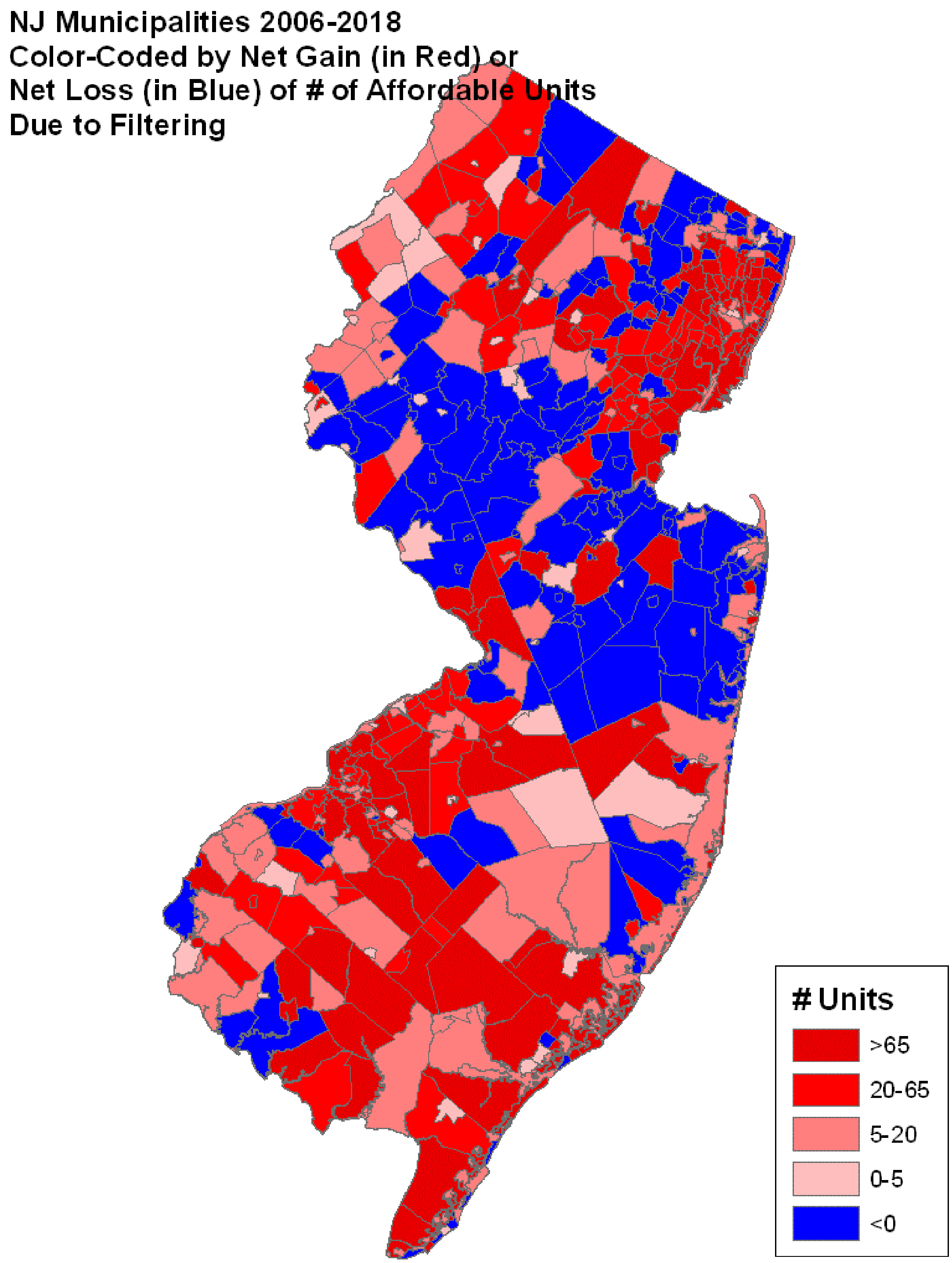
The final stage in this process is to generate forecasts of future filtering. This will be done by applying the estimated model to the (observed) 2005 values of the independent variables for the housing stock in each municipality. Each municipality is assigned a categorical value of the independent variables in Table 3. Based upon the values of these variables, the probabilities of filtering up or down can be interpreted as the percent of each municipality's housing stock that either filters up or down. These percents are applied to the estimated 2014 housing stock of each municipality (from Task 1) to compute the percent of units that will filter up or down. These units will then have the affordability definition applied according to COAH's 2006 regional income limits to determine which units that filter down become affordable. Lastly, the predicted upward filtering units are netted against the predicted downward filtering units to obtain the forecast of affordable units that will be supplied by net downward filtering during the years 2006-2018, for each municipality.

[11] Note: Region 6 is omitted from the regression because it is the baseline, or "control", category. This is standard in econometric regressions that use a vector of dummy variables: one category is withheld as the omitted category so that the remaining categories measure the fixed effect relative to the omitted category.

9.0 FORECAST RESULTS

Project gains from downward filtering are computed for each municipality. Figure 9.1 color-codes each municipality by the number of net units that are forecast to filter:

Figure 9.1 - Net Gains/Losses from Filtering by Municipality, All Units



Source: Econsult Corporation (2007)

As the map indicates, the northern and southern parts of the state are projected to experience net gains in affordable housing due to filtering, while the central areas are projected to experience net losses.[12] Areas which experienced the largest net losses of affordable housing include Long Branch City (-429 units), Brick Township (-372), Wayne Township (-208), Sayreville Borough (-174) and a number of various Shore communities, many of which are hard to see on the map because their size is so small relative to the size of the entire state. At the other end of the spectrum, the areas which experienced the largest gains in affordable housing units due to net downward filtering are, again, the older, urban population centers of the state, including: Newark (+5,725 units), Camden (1,907), Jersey City (834), Passaic (787), Pennsauken (649), and Bayonne (423).

The municipal numbers were then aggregated to COAH regions. Figure 9.2 gives the filtering numbers, by region, for COAH's second and third Rounds:

Figure 9.2 - Total Filtering by Region: # Units

Region	*1993-1999*	*1999-2018*	*Total*
1	3,422	13,554	16,976
2	1,708	12,663	14,371
3	402	515	917
4	468	3,172	3,640
5	1,351	10,912	12,263
6	359	6,490	6,849
Total	7,710	47,306	55,016

Source: Econsult Corporation (2007)

The table indicates that—like the municipal numbers—the regions with the greatest gains in filtering contain the larger cities in the state. **From 1993 to 1999, New Jersey had a statewide gain of 7,710 affordable housing units due to net downward filtering, while a total net gain of 47,306 units is projected for the 1999 to 2018 period.**

The net gains to affordable housing from filtering are much larger for the second period than for the first period for several reasons. First, the forecast period is 20 years long, whereas the 1993-1999 period is

[12] Obtaining municipal-level forecasts with a high degree of precision is relatively more difficult than Regional-level forecasts. However, we still believe that our forecasts capture the essential geographic variation in filtering dynamics across municipalities, with outer-ring suburbs (new construction and redevelopment) and high-priced Shore communities (land constrained) experiencing net losses, while older urban cores experience the greatest gains.

only 6 years. This gives filtering dynamics a longer time to supply affordable units to the market. Secondly, the 1993-1999 period was a time when the housing market was mostly flat, with relatively few transactions taking place (at least compared to the 1999-2005 period). With fewer units transacting, filtering dynamics are inhibited from supplying affordable units. Thirdly, the years following 1999 were ones characterized by relatively high levels of new housing construction. Since the model incorporates the overall supply of new housing in its forecast, the level of filtering is projected to increase as existing households move into new units, thus vacating their previous units which are subsequently free to filter down. Fourthly, the forecast incorporated an assumption of "down-to-flat" conditions in the housing market. Indeed, the data overwhelmingly supports this assumption, since the market's peak year was 2005, and has steadily cooled ever since. Since periods of price depreciation (like in the early 1990s) are associated with an acceleration in downward filtering, this also acts to projects additional gains from filtering. Lastly, points Three and Four act together to accelerate filtering: a period of extensive new construction followed by a period of price deflation are both strongly associated with a period of gains from downward filtering. Hence, we believe that the relatively large magnitude of our filtering forecast is supported by both existing research on filtering dynamics and on the expected state of the overall housing market.

10.0 CONCLUSION

In summary, we believe that our results support both our approach and our conclusions. Our data is limited to just New Jersey yet provides comprehensive statewide coverage. We apply a rigorous and robust approach to defining filtering that is not sensitive to small perturbations in the data. Our results are also supported by what previous research has found about the dynamics of filtering: downward filtering is prevalent during contractions of the housing cycle while upward filtering is more prevalent during expansionary cycles of the market. Moreover, the results are consistent with the widely held perceptions about the New Jersey housing market over the course of the cycle: downward filtered units are concentrated in older urban cores like Newark, Camden and Passaic, upward filtered units are concentrated in gentrifying areas like Hoboken, in affluent suburbs, and in vacation markets such as the Jersey Shore. Finally, the deletion of these consistently unaffordable submarkets from the sample yields the result that there is net downward filtering in the low-mod segment of New Jersey's housing market, and this increased the supply of affordable housing to low-to-moderate income households during this period.

APPENDIX A – REFERENCES

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APPENDIX B - GAINS FROM NET FILTERING BY MUNICIPALITY, 1993-1999

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Allendale Borough	Bergen	1	2
Alpine Borough	Bergen	1	1
Bergenfield Borough	Bergen	1	9
Bogota Borough	Bergen	1	3
Carlstadt Borough	Bergen	1	2
Cliffside Park Borough	Bergen	1	10
Closter Borough	Bergen	1	3
Cresskill Borough	Bergen	1	3
Demarest Borough	Bergen	1	2
Dumont Borough	Bergen	1	6
East Rutherford Borough	Bergen	1	3
Edgewater Borough	Bergen	1	4
Elmwood Park Borough	Bergen	1	7
Emerson Borough	Bergen	1	2
Englewood City	Bergen	1	9
Englewood Cliffs Borough	Bergen	1	2
Fair Lawn Borough	Bergen	1	12
Fairview Borough	Bergen	1	4
Fort Lee Borough	Bergen	1	17
Franklin Lakes Borough	Bergen	1	3
Garfield City	Bergen	1	11

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Glen Rock Borough	Bergen	1	4
Hackensack City	Bergen	1	18
Harrington Park Borough	Bergen	1	2
Hasbrouck Heights Borough	Bergen	1	4
Haworth Borough	Bergen	1	1
Hillsdale Borough	Bergen	1	3
Ho-Ho-Kus Borough	Bergen	1	2
Leonia Borough	Bergen	1	3
Little Ferry Borough	Bergen	1	4
Lodi Borough	Bergen	1	9
Lyndhurst Township	Bergen	1	8
Mahwah Township	Bergen	1	9
Maywood Borough	Bergen	1	3
Midland Park Borough	Bergen	1	3
Montvale Borough	Bergen	1	3
Moonachie Borough	Bergen	1	1
New Milford Borough	Bergen	1	6
North Arlington Borough	Bergen	1	6
Northvale Borough	Bergen	1	2
Norwood Borough	Bergen	1	2
Oakland Borough	Bergen	1	4
Old Tappan Borough	Bergen	1	2

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Oradell Borough	Bergen	1	3
Palisades Park Borough	Bergen	1	6
Paramus Borough	Bergen	1	8
Park Ridge Borough	Bergen	1	3
Ramsey Borough	Bergen	1	5
Ridgefield Borough	Bergen	1	4
Ridgefield Park Village	Bergen	1	5
Ridgewood Village	Bergen	1	8
River Edge Borough	Bergen	1	4
River Vale Township	Bergen	1	3
Rochelle Park Township	Bergen	1	2
Rockleigh Borough	Bergen	1	0
Rutherford Borough	Bergen	1	7
Saddle Brook Township	Bergen	1	5
Saddle River Borough	Bergen	1	1
South Hackensack Township	Bergen	1	1
Teaneck Township	Bergen	1	13
Tenafly Borough	Bergen	1	4
Teterboro borough	Bergen	1	0
Upper Saddle River Borough	Bergen	1	2
Waldwick Borough	Bergen	1	3
Wallington Borough	Bergen	1	4

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Washington Township	Bergen	1	2
Westwood Borough	Bergen	1	4
Woodcliff Lake Borough	Bergen	1	2
Wood-Ridge borough	Bergen	1	7
Wyckoff Township	Bergen	1	6
Bayonne City	Hudson	1	25
East Newark Borough	Hudson	1	1
Guttenberg Town	Hudson	1	89
Harrison Town	Hudson	1	5
Hoboken City	Hudson	1	-306
Jersey City	Hudson	1	637
Kearny Town	Hudson	1	13
North Bergen Township	Hudson	1	261
Secaucus Town	Hudson	1	6
Union City	Hudson	1	765
Weehawken Township	Hudson	1	6
West New York Town	Hudson	1	240
Bloomingdale Borough	Passaic	1	3
Clifton City	Passaic	1	79
Haledon Borough	Passaic	1	3
Hawthorne Borough	Passaic	1	7
Little Falls Township	Passaic	1	4

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
North Haledon Borough	Passaic	1	3
Passaic City	Passaic	1	516
Paterson City	Passaic	1	637
Pompton Lakes Borough	Passaic	1	4
Prospect Park Borough	Passaic	1	2
Ringwood Borough	Passaic	1	4
Totowa Borough	Passaic	1	3
Wanaque Borough	Passaic	1	3
Wayne Township	Passaic	1	18
West Milford Township	Passaic	1	9
West Paterson Borough	Passaic	1	4
Andover Borough	Sussex	1	0
Andover Township	Sussex	1	2
Branchville Borough	Sussex	1	1
Byram Township	Sussex	1	3
Frankford Township	Sussex	1	2
Franklin Borough	Sussex	1	2
Fredon Township	Sussex	1	1
Green Township	Sussex	1	1
Hamburg Borough	Sussex	1	1
Hampton Township	Sussex	1	2
Hardyston Township	Sussex	1	3

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Hopatcong Borough	Sussex	1	6
Lafayette Township	Sussex	1	1
Montague Township	Sussex	1	2
Newton Town	Sussex	1	3
Ogdensburg Borough	Sussex	1	1
Sandyston Township	Sussex	1	1
Sparta Township	Sussex	1	6
Stanhope Borough	Sussex	1	2
Stillwater Township	Sussex	1	2
Sussex Borough	Sussex	1	1
Vernon Township	Sussex	1	9
Walpack Township	Sussex	1	0
Wantage Township	Sussex	1	3
City Of Orange Township	Essex	2	12
Belleville Township	Essex	2	13
Bloomfield Township	Essex	2	18
Caldwell Borough	Essex	2	3
Cedar Grove Township	Essex	2	4
East Orange City	Essex	2	360
Essex Fells Borough	Essex	2	1
Fairfield Township	Essex	2	2
Glen Ridge Borough	Essex	2	2

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Irvington Township	Essex	2	382
Livingston Township	Essex	2	9
Maplewood Township	Essex	2	8
Millburn Township	Essex	2	7
Montclair Township	Essex	2	-108
Newark City	Essex	2	404
North Caldwell Borough	Essex	2	2
Nutley Township	Essex	2	10
Roseland Borough	Essex	2	2
South Orange Village Township	Essex	2	6
Verona Township	Essex	2	6
West Caldwell Township	Essex	2	4
West Orange Township	Essex	2	17
Boonton Town	Morris	2	3
Boonton Township	Morris	2	2
Butler Borough	Morris	2	3
Chatham Borough	Morris	2	3
Chatham Township	Morris	2	4
Chester Borough	Morris	2	1
Chester Township	Morris	2	2
Denville Township	Morris	2	6
Dover Town	Morris	2	6

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
East Hanover Township	Morris	2	4
Florham Park Borough	Morris	2	3
Hanover Township	Morris	2	4
Harding Township	Morris	2	1
Jefferson Township	Morris	2	7
Kinnelon Borough	Morris	2	3
Lincoln Park Borough	Morris	2	4
Long Hill Township	Morris	2	6
Madison Borough	Morris	2	2
Mendham Borough	Morris	2	2
Mendham Township	Morris	2	2
Mine Hill Township	Morris	2	7
Montville Township	Morris	2	8
Morris Plains Borough	Morris	2	7
Morris Township	Morris	2	2
Morristown Town	Morris	2	2
Mount Arlington Borough	Morris	2	9
Mount Olive Township	Morris	2	-1
Mountain Lakes Borough	Morris	2	2
Netcong Borough	Morris	2	19
Parsippany-Troy Hills Township	Morris	2	3
Pequannock Township	Morris	2	-7

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Randolph Township	Morris	2	8
Riverdale Borough	Morris	2	1
Rockaway Borough	Morris	2	2
Rockaway Township	Morris	2	8
Roxbury Township	Morris	2	8
Victory Gardens Borough	Morris	2	1
Washington Township	Morris	2	2
Wharton Borough	Morris	2	2
Berkeley Heights Township	Union	2	4
Clark Township	Union	2	6
Cranford Township	Union	2	8
Elizabeth City	Union	2	214
Fanwood Borough	Union	2	3
Garwood Borough	Union	2	2
Hillside Township	Union	2	7
Kenilworth Borough	Union	2	3
Linden City	Union	2	15
Mountainside Borough	Union	2	2
New Providence Borough	Union	2	4
Plainfield City	Union	2	173
Rahway City	Union	2	10
Roselle Borough	Union	2	7

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Roselle Park Borough	Union	2	5
Scotch Plains Township	Union	2	8
Springfield Township	Union	2	6
Summit City	Union	2	8
Union Township	Union	2	19
Westfield Town	Union	2	10
Winfield Township	Union	2	2
Allamuchy Township	Warren	2	2
Alpha Borough	Warren	2	1
Belvidere Town	Warren	2	1
Blairstown Township	Warren	2	2
Franklin Township	Warren	2	1
Frelinghuysen Township	Warren	2	1
Greenwich Township	Warren	2	2
Hackettstown Town	Warren	2	4
Hardwick Township	Warren	2	1
Harmony Township	Warren	2	1
Hope Township	Warren	2	1
Independence Township	Warren	2	2
Knowlton Township	Warren	2	1
Liberty Township	Warren	2	1
Lopatcong Township	Warren	2	2

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Mansfield Township	Warren	2	2
Oxford Township	Warren	2	1
Phillipsburg Town	Warren	2	-158
Pohatcong Township	Warren	2	2
Washington Borough	Warren	2	3
Washington Township	Warren	2	2
White Township	Warren	2	2
Alexandria Township	Hunterdon	3	2
Bethlehem Township	Hunterdon	3	1
Bloomsbury Borough	Hunterdon	3	0
Califon Borough	Hunterdon	3	1
Clinton Town	Hunterdon	3	1
Clinton Township	Hunterdon	3	4
Delaware Township	Hunterdon	3	2
East Amwell Township	Hunterdon	3	2
Flemington Borough	Hunterdon	3	2
Franklin Township	Hunterdon	3	1
Frenchtown Borough	Hunterdon	3	1
Glen Gardner Borough	Hunterdon	3	1
Hampton Borough	Hunterdon	3	1
High Bridge Borough	Hunterdon	3	2
Holland Township	Hunterdon	3	2

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Kingwood Township	Hunterdon	3	2
Lambertville City	Hunterdon	3	2
Lebanon Borough	Hunterdon	3	1
Lebanon Township	Hunterdon	3	2
Milford Borough	Hunterdon	3	1
Raritan Township	Hunterdon	3	7
Readington Township	Hunterdon	3	6
Stockton Borough	Hunterdon	3	0
Tewksbury Township	Hunterdon	3	2
Union Township	Hunterdon	3	19
West Amwell Township	Hunterdon	3	1
Carteret Borough	Middlesex	3	7
Cranbury Township	Middlesex	3	1
Dunellen Borough	Middlesex	3	2
East Brunswick Township	Middlesex	3	16
Edison Township	Middlesex	3	34
Helmetta Borough	Middlesex	3	1
Highland Park Borough	Middlesex	3	6
Jamesburg Borough	Middlesex	3	2
Metuchen Borough	Middlesex	3	5
Middlesex Borough	Middlesex	3	5
Milltown Borough	Middlesex	3	3

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Monroe Township	Middlesex	3	12
New Brunswick City	Middlesex	3	79
North Brunswick Township	Middlesex	3	13
Old Bridge Township	Middlesex	3	20
Perth Amboy City	Middlesex	3	-155
Piscataway Township	Middlesex	3	16
Plainsboro Township	Middlesex	3	9
Sayreville Borough	Middlesex	3	14
South Amboy City	Middlesex	3	3
South Brunswick Township	Middlesex	3	13
South Plainfield Borough	Middlesex	3	7
South River Borough	Middlesex	3	6
Spotswood Borough	Middlesex	3	3
Woodbridge Township	Middlesex	3	34
Bedminster Township	Somerset	3	4
Bernards Township	Somerset	3	9
Bernardsville Borough	Somerset	3	3
Bound Brook Borough	Somerset	3	107
Branchburg Township	Somerset	3	5
Bridgewater Township	Somerset	3	15
Far Hills Borough	Somerset	3	1
Franklin Township	Somerset	3	1

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Green Brook Township	Somerset	3	2
Hillsborough Township	Somerset	3	12
Manville Borough	Somerset	3	4
Millstone Borough	Somerset	3	0
Montgomery Township	Somerset	3	-8
North Plainfield Borough	Somerset	3	9
Peapack-Gladstone Borough	Somerset	3	1
Raritan Borough	Somerset	3	3
Rocky Hill Borough	Somerset	3	0
Somerville Borough	Somerset	3	4
South Bound Brook Borough	Somerset	3	2
Warren Township	Somerset	3	4
Watchung Borough	Somerset	3	2
East Windsor Township	Mercer	4	9
Ewing Township	Mercer	4	12
Hamilton Township	Mercer	4	32
Hightstown Borough	Mercer	4	2
Hopewell Borough	Mercer	4	1
Hopewell Township	Mercer	4	5
Lawrence Township	Mercer	4	10
Pennington Borough	Mercer	4	1
Princeton Borough	Mercer	4	3

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Princeton Township	Mercer	4	6
Trenton City	Mercer	4	22
Washington Township	Mercer	4	2
West Windsor Township	Mercer	4	7
Aberdeen Township	Monmouth	4	6
Allenhurst Borough	Monmouth	4	1
Allentown Borough	Monmouth	4	1
Asbury Park City	Monmouth	4	386
Atlantic Highlands Borough	Monmouth	4	2
Avon-By-The-Sea Borough	Monmouth	4	2
Belmar Borough	Monmouth	4	4
Bradley Beach Borough	Monmouth	4	3
Brielle Borough	Monmouth	4	2
Colts Neck Township	Monmouth	4	3
Deal Borough	Monmouth	4	1
Eatontown Borough	Monmouth	4	6
Englishtown Borough	Monmouth	4	1
Fair Haven Borough	Monmouth	4	2
Farmingdale Borough	Monmouth	4	1
Freehold Borough	Monmouth	4	4
Freehold Township	Monmouth	4	10
Hazlet Township	Monmouth	4	7

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Highlands Borough	Monmouth	4	3
Holmdel Township	Monmouth	4	4
Howell Township	Monmouth	4	15
Interlaken Borough	Monmouth	4	1
Keansburg Borough	Monmouth	4	4
Keyport Borough	Monmouth	4	3
Little Silver Borough	Monmouth	4	2
Loch Arbour Village	Monmouth	4	0
Long Branch City	Monmouth	4	28
Manalapan Township	Monmouth	4	10
Manasquan Borough	Monmouth	4	3
Marlboro Township	Monmouth	4	11
Matawan Borough	Monmouth	4	3
Middletown Township	Monmouth	4	23
Millstone Township	Monmouth	4	3
Monmouth Beach Borough	Monmouth	4	2
Neptune City Borough	Monmouth	4	2
Neptune Township	Monmouth	4	138
Ocean Township	Monmouth	4	3
Oceanport Borough	Monmouth	4	2
Red Bank Borough	Monmouth	4	5
Roosevelt Borough	Monmouth	4	0

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Rumson Borough	Monmouth	4	3
Sea Bright Borough	Monmouth	4	1
Sea Girt Borough	Monmouth	4	1
Shrewsbury Borough	Monmouth	4	1
Shrewsbury Township	Monmouth	4	1
South Belmar Borough	Monmouth	4	3
Spring Lake Borough	Monmouth	4	2
Spring Lake Heights Borough	Monmouth	4	3
Tinton Falls Borough	Monmouth	4	-3
Union Beach Borough	Monmouth	4	2
Upper Freehold Township	Monmouth	4	2
Wall Township	Monmouth	4	9
West Long Branch Borough	Monmouth	4	2
Barnegat Light Borough	Ocean	4	1
Barnegat Township	Ocean	4	6
Bay Head Borough	Ocean	4	1
Beach Haven Borough	Ocean	4	3
Beachwood Borough	Ocean	4	3
Berkeley Township	Ocean	4	-7
Brick Township	Ocean	4	31
Eagleswood Township	Ocean	4	1
Harvey Cedars Borough	Ocean	4	1

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Island Heights Borough	Ocean	4	1
Jackson Township	Ocean	4	14
Lacey Township	Ocean	4	10
Lakehurst Borough	Ocean	4	-50
Lakewood Township	Ocean	4	-138
Lavallette Borough	Ocean	4	3
Little Egg Harbor Township	Ocean	4	7
Long Beach Township	Ocean	4	9
Manchester Township	Ocean	4	-317
Mantoloking Borough	Ocean	4	1
Ocean Gate Borough	Ocean	4	1
Ocean Township	Ocean	4	3
Pine Beach Borough	Ocean	4	1
Plumsted Township	Ocean	4	3
Point Pleasant Beach Borough	Ocean	4	3
Point Pleasant Borough	Ocean	4	8
Seaside Heights Borough	Ocean	4	3
Seaside Park Borough	Ocean	4	3
Ship Bottom Borough	Ocean	4	2
South Toms River Borough	Ocean	4	1
Stafford Township	Ocean	4	10
Surf City Borough	Ocean	4	2

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Tuckerton Borough	Ocean	4	2
Bass River Township	Burlington	5	1
Beverly City	Burlington	5	1
Bordentown City	Burlington	5	2
Bordentown Township	Burlington	5	3
Burlington City	Burlington	5	4
Burlington Township	Burlington	5	7
Chesterfield Township	Burlington	5	1
Cinnaminson Township	Burlington	5	5
Delanco Township	Burlington	5	1
Delran Township	Burlington	5	6
Eastampton Township	Burlington	5	2
Edgewater Park Township	Burlington	5	3
Evesham Township	Burlington	5	15
Fieldsboro Borough	Burlington	5	0
Florence Township	Burlington	5	4
Hainesport Township	Burlington	5	2
Lumberton Township	Burlington	5	4
Mansfield Township	Burlington	5	2
Maple Shade Township	Burlington	5	9
Medford Lakes Borough	Burlington	5	2
Medford Township	Burlington	5	8

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Moorestown Township	Burlington	5	7
Mount Holly Township	Burlington	5	4
Mount Laurel Township	Burlington	5	16
New Hanover Township	Burlington	5	1
North Hanover Township	Burlington	5	3
Palmyra Borough	Burlington	5	3
Pemberton Borough	Burlington	5	1
Pemberton Township	Burlington	5	10
Riverside Township	Burlington	5	3
Riverton Borough	Burlington	5	1
Shamong Township	Burlington	5	2
Southampton Township	Burlington	5	4
Springfield Township	Burlington	5	6
Tabernacle Township	Burlington	5	2
Washington Township	Burlington	5	2
Westampton Township	Burlington	5	2
Willingboro Township	Burlington	5	10
Woodland Township	Burlington	5	1
Wrightstown Borough	Burlington	5	-14
Audubon Borough	Camden	5	4
Audubon Park Borough	Camden	5	2
Barrington Borough	Camden	5	3

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Bellmawr Borough	Camden	5	4
Berlin Borough	Camden	5	2
Berlin Township	Camden	5	2
Brooklawn Borough	Camden	5	1
Camden City	Camden	5	465
Cherry Hill Township	Camden	5	26
Chesilhurst Borough	Camden	5	1
Clementon Borough	Camden	5	2
Collingswood Borough	Camden	5	7
Gibbsboro Borough	Camden	5	1
Gloucester City	Camden	5	4
Gloucester Township	Camden	5	23
Haddon Heights Borough	Camden	5	3
Haddon Township	Camden	5	6
Haddonfield Borough	Camden	5	4
Hi-Nella Borough	Camden	5	1
Laurel Springs Borough	Camden	5	1
Lawnside Borough	Camden	5	1
Lindenwold Borough	Camden	5	441
Magnolia Borough	Camden	5	2
Merchantville Borough	Camden	5	2
Mount Ephraim Borough	Camden	5	2

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Oaklyn Borough	Camden	5	2
Pennsauken Township	Camden	5	12
Pine Hill Borough	Camden	5	4
Pine ValleyBorough	Camden	5	0
Runnemede Borough	Camden	5	3
Somerdale Borough	Camden	5	2
Stratford Borough	Camden	5	3
Tavistock Borough	Camden	5	0
Voorhees Township	Camden	5	10
Waterford Township	Camden	5	3
Winslow Township	Camden	5	12
Woodlynne Borough	Camden	5	1
Clayton Borough	Gloucester	5	3
Deptford Township	Gloucester	5	10
East Greenwich Township	Gloucester	5	2
Elk Township	Gloucester	5	2
Franklin Township	Gloucester	5	1
Glassboro Borough	Gloucester	5	73
Greenwich Township	Gloucester	5	2
Harrison Township	Gloucester	5	3
Logan Township	Gloucester	5	2
Mantua Township	Gloucester	5	5

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Monroe Township	Gloucester	5	12
National Park Borough	Gloucester	5	1
Newfield Borough	Gloucester	5	1
Paulsboro Borough	Gloucester	5	3
Pitman Borough	Gloucester	5	3
South Harrison Township	Gloucester	5	0
Swedesboro Borough	Gloucester	5	1
Washington Township	Gloucester	5	2
Wenonah Borough	Gloucester	5	1
West Deptford Township	Gloucester	5	8
Westville Borough	Gloucester	5	2
Woodbury City	Gloucester	5	4
Woodbury Heights Borough	Gloucester	5	1
Woolwich Township	Gloucester	5	1
Absecon City	Atlantic	6	3
Atlantic City	Atlantic	6	45
Brigantine City	Atlantic	6	9
Buena Borough	Atlantic	6	2
Buena Vista Township	Atlantic	6	3
Corbin City	Atlantic	6	0
Egg Harbor City	Atlantic	6	2
Egg Harbor Township	Atlantic	6	12

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Estell Manor City	Atlantic	6	1
Folsom Borough	Atlantic	6	1
Galloway Township	Atlantic	6	10
Hamilton Township	Atlantic	6	32
Hammonton Town	Atlantic	6	4
Linwood City	Atlantic	6	3
Longport Borough	Atlantic	6	2
Margate City	Atlantic	6	7
Mullica Township	Atlantic	6	2
Northfield City	Atlantic	6	3
Pleasantville City	Atlantic	6	7
Port Republic City	Atlantic	6	1
Somers Point City	Atlantic	6	5
Ventnor City	Atlantic	6	8
Weymouth Township	Atlantic	6	1
Avalon Borough	Cape May	6	5
Cape May City	Cape May	6	4
Cape May Point Borough	Cape May	6	1
Dennis Township	Cape May	6	2
Lower Township	Cape May	6	13
Middle Township	Cape May	6	7
North Wildwood City	Cape May	6	7

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Ocean City	Cape May	6	19
Sea Isle City	Cape May	6	6
Stone Harbor Borough	Cape May	6	3
Upper Township	Cape May	6	5
West Cape May Borough	Cape May	6	1
West Wildwood Borough	Cape May	6	1
Wildwood City	Cape May	6	6
Wildwood Crest Borough	Cape May	6	4
Woodbine Borough	Cape May	6	1
Bridgeton City	Cumberland	6	27
Commercial Township	Cumberland	6	2
Deerfield Township	Cumberland	6	1
Downe Township	Cumberland	6	1
Fairfield Township	Cumberland	6	2
Greenwich Township	Cumberland	6	2
Hopewell Township	Cumberland	6	5
Lawrence Township	Cumberland	6	10
Maurice River Township	Cumberland	6	2
Millville City	Cumberland	6	10
Shiloh Borough	Cumberland	6	0
Stow Creek Township	Cumberland	6	0
Upper Deerfield Township	Cumberland	6	3

Municipality Name	*County*	*COAH Region*	*# Units Filtered*
Vineland City	Cumberland	6	20
Alloway Township	Salem	6	0
Carneys Point Township	Salem	6	3
Elmer Borough	Salem	6	1
Elsinboro Township	Salem	6	1
Lower Alloways Creek Township	Salem	6	1
Mannington Township	Salem	6	0
Oldmans Township	Salem	6	1
Penns Grove Borough	Salem	6	2
Pennsville Township	Salem	6	6
Pilesgrove Township	Salem	6	1
Pittsgrove Township	Salem	6	3
Quinton Township	Salem	6	1
Salem City	Salem	6	3
Upper Pittsgrove Township	Salem	6	1
Woodstown Borough	Salem	6	2

Task 3 – Compensatory Benefits to Developers for Provision of Affordable Housing:

<u>Inclusionary Housing: Lessons from the National Experience</u>

<u>Prepared By:</u>

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November 5, 2007

<u>Submitted To:</u>

New Jersey Council on Affordable Housing (COAH)
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Trenton, NJ 08625

Acknowledgements

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Special thanks to Business and Professional People for the Public Interest (BPI) in Chicago, Illinois who provided research assistance for this project. BPI's assistance in gathering ordinances, program information, and existing studies was invaluable to this report.

Executive Summary

For over two decades, under the regulatory framework established by the State of New Jersey's Fair Housing Act and administered by the Council on Affordable Housing (COAH), local governments in the state of New Jersey have partnered with developers to create affordable housing within market-rate developments. COAH is now in the process of attempting to re-write the Third Round Rules governing this regulatory framework.

During Rounds I and II, hundreds of communities in New Jersey created affordable housing plans and submitted them to COAH for certification in order to gain a "safe harbor" from any possible "builder's remedy" lawsuits filed by developers. These plans had to create a "realistic opportunity" for the development of affordable housing. Many of these plans involved inclusionary housing provisions, where market-rate developments on certain sites were required to include affordable housing (typically 15-20% affordable housing) and in return, were provided with a presumptive density level. By requiring the inclusion of affordable housing within market-rate developments on sites that provided at least a presumptive level of density, municipalities and developers jointly created tens of thousands of affordable homes, many of them *without any state or federal financing.* In compiling this impressive record on affordable housing, New Jersey has embodied the true spirit of Supreme Court Justice Louis Brandeis's call for our states to be "laboratories of democracy."

Of course, no system is perfect. In drafting the Third Round rules, New Jersey must examine how to best improve the state regulatory framework that has helped to create so much affordable housing and that has helped to inspire other state and local efforts across the country. No other state has passed a statewide regulatory framework that is as far-reaching and comprehensive as New Jersey, but hundreds of inclusionary housing programs now exist nationwide (some of them passed prior to the beginning of New Jersey's efforts, most of them passed after) in a diverse array of locations. Many of these programs have been quite successful and now represent a significant portion of the affordable housing production in these communities.

In order to assist COAH in its efforts to produce the final Third Round Rules, we are submitting this report providing information about inclusionary housing programs from across the country. Inclusionary housing programs, for purposes of this report, are defined as programs where the inclusion of affordable housing in an otherwise market-rate development is required or encouraged. This report uses existing research and literature on inclusionary housing programs as well as an in-depth review of approximately 30 programs nationwide in over 10 states to provide COAH with information on the following two aspects of inclusionary housing programs:

1) Cost Offsets or Incentives provided to developers as part of an inclusionary housing program; and
2) Fee in Lieu Payment provisions included in inclusionary housing programs.

Cost Offsets are defined for purposes of this report as any benefit provided to a development that includes affordable housing in order to help defray the cost of creating the affordable housing or in order to help improve the financial feasibility of the project (such as increased density and zoning flexibility, parking reductions, fee waivers and expedited approval processes). National experience indicates that cost offsets, coupled with a mandatory affordable housing requirement, serve as a powerful tool for creating affordable housing. However, experience nationwide also reveals that programs *both with and without* cost offsets have enjoyed success at producing significant amounts of affordable housing. The success of any inclusionary housing program appears to be a product of local market conditions, local political conditions, and the presence or absence of a statewide regulatory framework that encourages or requires the adoption of inclusionary housing practices in the marketplace.

Fee in lieu payments, for purposes of this report, are defined as payments made by developers "in lieu of" building affordable units as part of the market-rate development. Fee in lieu payment provisions can be calculated and designed differently in order to address different policy goals. Fee in lieu payment provisions can be structured to primarily: a) encourage the construction of affordable units on site; b) encourage the construction of affordable units on-site and off-site; c) raise revenue for affordable housing; or d) produce a balanced mix of affordable housing units and revenue for affordable housing. In addition, a well-crafted fee in lieu payment provision can also effectively help a local government: a) to address a broader array of housing needs; b) to provide a way for very small developments to participate in an inclusionary housing program; and c) to deal with policy dilemmas such as difficult to develop or environmentally-sensitive sites, the desire to stimulate development in certain locations of a community, or situations where the affordable units will be difficult to sustain over time (e.g. a luxury high-rise building with excessively high condo assessment fees).

As New Jersey takes steps to "re-tool" its regulatory framework for Round III and to adapt its framework to a changed world and marketplace, New Jersey can draw upon the lessons and experiences with inclusionary housing programs in other parts of the country to inform its own efforts at home. The following five recommendations are drawn from the national experience and are crafted to aid New Jersey in its efforts.

<u>Recommendation #1</u>: Establish a predictable affordable housing requirement coupled with a required density bonus or a required presumptive density level. COAH Rules should require local municipalities to establish a clear and predictable affordable housing requirement and a corresponding presumptive density level or density bonus.

<u>Recommendation #2</u>: Allow state and federal financing/subsidies to be used for greater and increased affordability. Inclusionary developments under Round III should be allowed to use state or federal housing subsidies BUT ONLY IF those state or federal housing dollars are used to create MORE affordable housing units than are required under COAH rules and/or only if those state or federal housing dollars are used to make the affordable housing units MORE AFFORDABLE than is required under COAH rules.

<u>Recommendation #3:</u> **Link more generous cost offsets to greater and increased affordability.** Local municipalities should provide additional cost offsets (e.g. increased density) in those developments where the developer exceeds the minimum affordable housing percentage required and/or exceeds the minimum affordability levels required. COAH should consider ways to reward and incentivize local municipalities to pursue this route.

<u>Recommendation #4:</u> **Calculate fee in lieu amounts, at a minimum, as an amount equal the cost to construct an affordable housing unit or the cost to subsidize a market-rate unit so that it can sell or rent at an affordable price.** Fee in lieu amounts should be predictable and clear so that developers can calculate them; and they should be calculated as explained above in order to encourage the creation of affordable housing units as part of market-rate developments and in order to ensure that a significant amount of money is actually collected in the case that the developer chooses or is allowed to pay the fee.

<u>Recommendation #5:</u> **Utilize Fee in Lieu provisions to address policy goals and dilemmas. COAH should consider rules that would allow individual municipalities to establish some local criteria for the payment of the fee in lieu in order to address local policy issues.** Local communities could benefit from the ability to collect fees based on their discretion or based on specific local criteria to be met by the development in order to help address a variety of local policy concerns (e.g. economic hardship cases; environmental site issues; desire to collect money from downtown development instead of units, etc.).

These recommendations are more fully explained in the Recommendations section of this report.

Inclusionary housing policies work when they best reflect the market forces and political realities of the state and local contexts in which they work. The recommendations listed above must be adapted to best address realities in New Jersey. However, experience from around the country and from two decades of inclusionary housing in New Jersey demonstrate that inclusionary housing can work; inclusionary housing does work when structured correctly; and inclusionary housing must work if states and localities hope to make significant progress towards fully addressing the need for a greater supply of affordable housing overall and a greater supply of affordable housing in locations near jobs, opportunity, and existing infrastructure.

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I. Introduction

For over two decades, under the regulatory framework established by the State of New Jersey's Fair Housing Act and administered by the Council on Affordable Housing (COAH), local governments in the state of New Jersey have partnered with developers to create affordable housing within market-rate developments. COAH is now in the process of attempting to re-write the Third Round Rules governing this regulatory framework.

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In order to assist COAH in its efforts to produce the final Third Round Rules, we are submitting this report providing information about inclusionary housing programs from across the country. Inclusionary housing programs, for purposes of this report, are defined as programs where the inclusion of affordable housing in an otherwise market-rate development is required or encouraged. This report uses existing research and literature on inclusionary housing programs as well as an in-depth review of approximately 30 programs nationwide in over 10 states to provide COAH with information on the following two aspects of inclusionary housing programs:

1) Cost Offsets or Incentives provided to developers as part of an inclusionary housing program; and
2) Fee in Lieu Payment provisions included in inclusionary housing programs.

Cost Offsets are defined for purposes of this report as any benefit provided to a development that includes affordable housing in order to help defray the cost of creating the affordable housing or in order to help improve the financial feasibility of the project. Cost Offsets can include, but are not limited to: density bonuses, zoning/design flexibility (e.g. reduced setbacks, increased height, increased floor area ratios, etc), parking reductions, property use/housing type flexibility (e.g. mixing townhomes and duplexes with single-family homes), fee waivers, reduced finishes or unit sizes, tax breaks, cash subsidies, and expedited approval processes.

Fee in lieu payments, for purposes of this report, are defined as payments made by developers "in lieu of" building affordable units as part of the market-rate development. Fee in lieu payment provisions can be calculated and designed differently in order to address policy goals.

The report includes: 1) a brief summary of inclusionary housing and its impact and presence nationwide; 2) a detailed review and analysis of different kinds of cost offsets offered by programs across the county; 3) a detailed review and analysis of different fee-in-lieu payment provisions from across the country; and 4) some concluding recommendations related to these two areas. Exhibit A to the report provides a summary of program details of a representative sampling of inclusionary housing programs across the county; Exhibit B to the report provides a list of the cost offsets provided by a representative sampling of programs nationwide; Exhibit C provides a list of key individuals who were interviewed and who provided key information about specific inclusionary housing programs; and Exhibit D provides a sampling of economic feasibility studies and affordable housing studies completed by specific jurisdictions either examining or implementing an inclusionary housing program.

II. Inclusionary Housing

Inclusionary housing programs require or encourage the inclusion of a certain percentage of affordable housing in all developments of a certain size (e.g. five units) or in all developments that meet certain characteristics (e.g. developments that require a special permit). A few programs (Boulder, Colorado; Davidson, North Carolina; and Irvine, California; for example) require that essentially all residential development include some affordable housing. Many programs include "cost offsets" that are meant to help defray the cost of creating the affordable housing in the market-rate developments. Many programs allow developers to pay a fee "in lieu" of including affordable housing in the market-rate development. These fees are then typically deposited into a local housing trust fund and used to help address the need for affordable housing in the community in some other way – through purchase price assistance to first-time homebuyers, through subsidizing land acquisition for affordable housing, by providing gap financing to subsidize construction costs or write-down debt, to fund rental subsidies, etc.

Inclusionary housing programs are not a panacea for the affordable housing crisis; but they can create and preserve significant numbers of affordable housing, especially in expensive and high-cost markets where affordable housing is sorely lacking and desperately needed. They can produce affordable homes and apartments without the need for a new public funding stream; they can transform the face and image of affordable housing by creating affordable homes and apartments as a seamless part of market-rate developments; and they can help to mitigate the broader and highly negative consequences that can flow from a lack of affordable housing near jobs and opportunity – e.g. increased traffic congestion and poorer air quality, rising economic insecurity for working and middle-class families, declining social fabric and community ties, and reduced economic competitiveness.

In California, according to a 2003 survey that identified and surveyed approximately 107 local programs, one-third of these surveyed programs successfully produced over 34,000 units of affordable housing over thirty years.[i] According to a more recent study in California, there are now over 170 local jurisdictions with inclusionary housing programs and since 1999, these programs have created 29,281 affordable homes statewide.[ii] In the D.C. metro area, where the nation's best-known inclusionary housing program exists in Montgomery County, Maryland, four programs produced over 15,000 units between 1974 and 2004.[iii] This production number in the DC metro area continues to increase as do the number of local programs. Our nation's capital has adopted an inclusionary housing program that will add to these numbers.[iv] In New Jersey, from 1985 to 2000, at least 250 local governments used "de facto" inclusionary housing programs as part of their COAH-certified plans to create over 10,000 units of affordable housing in 15 years.[v]

In Massachusetts, inclusionary housing enjoys a strong presence due in large part to Chapter 40B (the state's Comprehensive Permit Law, also known as the "Anti-Snob Zoning Act"). Chapter 40B itself is a form of "developer-driven inclusionary housing" – developers can apply for a comprehensive permit and propose the zoning on a development site if they include 25% affordable housing. If that site is located in a community with less than 10% affordable housing, the developer can appeal the local decision (any denial or an approval with restrictions) to the statewide Housing Appeals Committee and seek relief there from those zoning and development standards that make the inclusion of 25% affordable housing infeasible. Chapter 40B has evolved into a process of negotiation between towns and developers (most developments no longer go to the Housing Appeals Committee) and has spurred the construction of over 43,000 housing units in 736 developments, with 23,000 units restricted and affordable to households at or below 80% of the AMI.[vi]

Chapter 40B has also spurred local communities to take action on their own by passing inclusionary housing provisions – as of 2002, it was estimated that at least 118 communities in Massachusetts had some form of voluntary or mandatory inclusionary zoning requirement or incentive.[vii] More Massachusetts communities since then have adopted inclusionary provisions.[viii]

Even though the lion's share of the programs and production may exist in New Jersey, California, Massachusetts, and the D.C. metro area, inclusionary housing has truly become a national phenomenon in the last decade. At least 300 to 400 local governments now use some form of inclusionary housing program. Inclusionary housing programs now exist in booming suburbs, college towns, mid-sized cities, large urban centers, resort towns, and affluent bedroom communities near jobs. They can be found in every part of the country: from states like California, Colorado, New Mexico, and Wyoming in the West to Illinois and Wisconsin in the heartland to Florida and North Carolina in the South to Virginia, Maryland, Massachusetts, Connecticut, New Jersey, and Vermont on the East Coast.

In Colorado, at least four communities (Denver, Boulder, Longmont, and Lafayette) have created successful programs since the mid-1990s. In Illinois, four communities in the Chicago metro region (Chicago, Highland Park, Evanston, and Lake Forest) have passed programs since 2002; and a fifth, St. Charles, which has been requiring some affordable housing on an ad hoc basis in new developments, is now drafting a formal, mandatory ordinance. Two additional suburban communities in Chicago (Arlington Heights and Lindenhurst) are requiring developers in certain situations to include affordable housing in new developments.

In North Carolina, a handful of communities in the research triangle near Raleigh-Durham (including Davidson and Chapel Hill) have passed or implemented local programs. And, the resurgence of some of America's urban centers has caused places like New York City, Chicago, Boston, San Diego, San Francisco, and Sacramento to pass programs. There is even a program in Wyoming – in Jackson, Wyoming, where the local community has implemented a program to address the lack of workforce housing in the resort area of Jackson Hole. Inclusionary housing exists in many places and as the affordable housing crisis arises as a serious issue in more localities, more and more communities are looking at this tool and considering whether to adopt a program. For a representative sampling of programs nationwide, their production numbers and characteristics, please see Exhibit A to this report.

III. Cost Offsets

As stated earlier, costs offsets for purposes of this report are defined as any benefit provided to a development that includes affordable housing in order to help defray the cost of creating the affordable housing or in order to help improve the financial feasibility of the project. Cost offsets are often used in inclusionary housing programs because: 1) they can help to ensure that the cost of creating affordable housing is broadly shared; 2) they can help to make the program more politically palatable; and 3) they can help to ensure the long-term success of the program by providing something of benefit to the developers who will be regulated by the program and who will be producing the housing under the program.

Cost offsets arise as a possible component of any inclusionary housing program because when a public entity attempts to mitigate, solve, or address any public problem, one of the first questions asked is, “Hey, who’s paying for this?” Decreasing pollution, fighting crime, ensuring an adequate supply of energy, creating a sufficient array of transportation options, making sure there is enough park-space, ensuring that development is orderly – in our modern era, all of these objectives typically require public spending, public regulation, or some other form of collective public action. This public action usually involves some cost and someone has to pay that cost.

Providing affordable housing is no different -- there is no free lunch. *Someone* always pays for the affordable housing. Under an inclusionary housing program, the affordable housing can be paid for by some combination of the following groups: landowners, market-rate homebuyers, developers, or the broader public or community. If a program contains significant “costs offsets” (density bonuses, flexible zoning or design standards, parking reductions, fee waivers, an expedited approval process, cash subsidies, etc.), then it is the broader public that pays for all or some portion of the cost of creating the affordable units.

If a program does not contain “cost offsets” or contains cost offsets that are insufficient to fully offset the cost of creating the affordable units, then the burden of paying for the affordable housing (or the portion of the cost of the affordable housing not covered by the offsets) inevitably falls to the developer, the landowner, or market-rate homebuyers, or some combination of all three.

The imposition of a mandatory affordable housing requirement in the zoning code could serve to do what many other provisions in a zoning code do – to reduce the price of land for those parcels affected by the regulation (in this case an affordable housing requirement). Developers will negotiate for a lower acquisition price for the property in order to “pay for” the cost of the affordable units that have to be built.

Or, it is possible, under certain circumstances, that the developer will be able to charge the market-rate homebuyers a marginally higher price for the market-rate homes. Or, it is possible that the developer will realize less profit than the developer would have realized without the affordable housing component. Or, some combination of all three potential outcomes could occur.

It is also possible that the affordable housing requirement (especially if not accompanied by cost offsets) will be so costly that it will cause developers to produce less housing (including fewer affordable units) and/or cause landowners to use land for other purposes than residential development, both of which could further constrict housing supply and cause the affordable housing problem to worsen, not improve.

However, economic literature, existing research, and experience with inclusionary housing programs suggest that: a) inclusionary housing programs have not caused development to slow and b) over the long run, it is most likely, in a program with no cost offsets or with cost offsets that are insufficient to cover the full cost of the affordable units, the affordable housing will be paid for by the landowner – through land prices that appreciate at a slower clip than they would have without an inclusionary requirement.[ix] Given that inclusionary housing programs are typically created in affluent, strong markets where land appreciation has risen and continues to rise at a very healthy clip, this is not an unwanted or necessarily unfair result. In these kinds of markets, in the long run, cost offsets may serve primarily to subsidize high land costs.

However, in the short run, the lack of cost offsets has the potential for imposing significant costs on individual parties (for example, on developers who already own land) until the market adjusts; and for this reason, cost offsets provide an attractive option for many local communities. By helping to prevent severe cost impacts in the short run to any one party, cost offsets can often help to make an inclusionary housing program more politically palatable. Cost offsets can help to lay the foundation for long-term buy-in and success, especially from the developers that will be regulated by the ordinance and who will be producing the affordable housing under the ordinance. The offsets present and granted in most programs nationwide probably do not account for 100% of the cost associated with the affordable units, but their presence can help to ensure that no one party bears the entire burden of "paying for" the affordable housing.

In California alone, the state with maybe the most "formal" inclusionary housing programs, a 2003 study of 107 California programs (which does not include every program in the state) showed that most programs did in fact contain some sort of cost offset. The list below shows what kinds of offsets were most often included in local programs:

Table 3.1: Cost Offsets Found in Survey of 107 Local Programs in California

Cost Offset	% of Programs Surveyed
Density Bonus	92%
Expedited Permitting/Approval	44%
Relaxed Design Standards	42%
Fee Waiver	42%
Subsidies for the Affordable Units	38%
Fee Reduction	35%

Fee Deferral	19%
Growth Control Exemption	13%
Tax Abatement	4%

Source: California Coalition for Rural Housing (CCRA) and Non-Profit Housing Association of Northern California (NPH). 2003. Inclusionary Housing in California: 30 Years of Innovation. San Francisco, CA: CCRH and NPH.

This analysis did not show how often these offsets were actually granted or used. It is important to note that the presence of an offset in an ordinance or in program regulations does not mean that it is necessarily used often or at all.

A. Types of Cost Offsets

Nationwide, there are many approaches and many paths to success. Table 3.2 below provides a preview of this next section – listing the types of cost offsets that will be reviewed, examples of that type of offset, and a representative community or two that uses this kind of offset. Exhibit B to the report provides a detailed listing of the costs offsets provided by a representative sampling of programs from around the country.

Table 3.2: Types of Cost Offsets

Type of Offset	Example	Communities
No Offsets	N/A	Boston
Density Bonus	Sliding Scale of 10-20%	Fairfax County, Virginia
Zoning/Design Flexibility	Height Bonus of 10 Feet	Santa Monica, California
Parking Reductions	50% Reduction for Affordable Units	Brookline, Massachusetts
Property Use/Housing Type Flexibility	Ability to mix townhomes and duplexes with single-family detached	Montgomery County, Maryland
Fee Waivers/ Reimbursements/ Reductions	$5,500 fee reimbursement per affordable unit built Rises to $10,000 per unit for units below 65% AMI	Denver
Reduced Finishes/Unit Sizes for Affordable Units	Allowed but affordable units must meet minimum size	Highland Park, Illinois

	guidelines and reduced finishes cannot affect energy efficiency	
Alternative Materials	Hardy Board Instead of All Brick Construction	Brookline allows alternative materials (not specifically the example cited here) but developer must apply for approval
Expedited Review/Approval	Priority Status for Permitting and Approvals	Sacramento, California Tallahassee, Florida
Tax Break	Waiver of housing excise tax for the permanently affordable units	Boulder, Colorado
Other Creative Approaches	Marketing Assistance	Chicago, Illinois Longmont, Colorado
Local, State, or Federal Subsidy	Use of Tax-exempt bonds and 4% credits	New York City

No Offsets

Some programs provide very little or nothing in the way of cost offsets or developer incentives. Boston, Massachusetts; Boulder, Colorado; Carlsbad, California; Chapel Hill, North Carolina; Davidson, North Carolina; Newton, Massachusetts; San Diego's Future Urbanizing Area program (FUA); and San Francisco, California all fit this bill. Some programs include a large number of possible cost offsets in their ordinance but rarely grant many of these offsets.

In other communities, such as Denver and Longmont, Colorado, the program provides fee reimbursements for all developments under the ordinance that include the required 10% (which is not a large cost offset), but only provides additional cost offsets once a developer sets aside more affordable housing than the baseline requirement. Unless the development includes more affordable housing than the minimum, few offsets are available.

Density Bonuses

Many programs allow the development covered by the inclusionary housing ordinance to include more units than would normally be allowed under the base zoning. For example, a program might allow a development to build one additional market-rate unit for each affordable unit required by the inclusionary housing program (as in Highland Park, Illinois). Or, the program might allow 30% more units to be included in the development than would otherwise be allowed under the base zoning (as in Cambridge, MA).

Not all density bonus provisions are the same of course. Some are based on a sliding scale commensurate with the percentage of affordable housing that is provided– as in Montgomery County, Maryland, where a development can enjoy a density bonus of seventeen percent (17%) to twenty-two percent (22%) when including twelve and sixth-tenths percent (12.6%) to fifteen percent (15%) affordable housing or in Fairfax County, Virginia – where a development can enjoy up to a twenty percent (20%) density bonus when including twelve and one-half (12.5%) affordable housing or under the State of California's, state-mandated density bonus, which provides a bonus of up to thirty-five percent (35%) of the underlying density, based upon the percentage amount and affordability levels of the affordable units provided.

Some bonuses are flat – as in Cambridge, Massachusetts, New York City (which offers a 33% density bonus), Santa Fe, New Mexico (which provides a 15% density bonus), or Tallahassee, Florida (which provides a 25% density bonus). Some bonuses are tailored to fit specific zoning districts, as in Stamford, Connecticut, where the allowable bonuses *can* range from 22% to 38%, depending on the multi-family housing district in which the development is located. However, in Stamford, the bonus must be approved by the Zoning Board of Appeals and some portion of the bonus must be dedicated to affordable housing units (more on this below). The density bonus in Madison, WI is similarly adjusted based upon the zoning district in which the development is located.

And of course, some are more generous (e.g. larger) than others. For example, in Santa Monica, a developer can *potentially* obtain up to a fifty percent (50%) density bonus (including both the state and local density bonuses offered), which is much larger than the nine percent (9%) bonus in Brentwood or the ten percent (10%) bonus in Denver.

Some programs do not require any of the "bonus units" to be affordable, such as Brentwood, Cambridge, Highland Park, Montgomery County, Fairfax County, Tallahassee, or the State of California's density bonus law. So, for example, in Montgomery County, if you include 15% affordable housing in a 100 unit subdivision, you will receive a 22% density bonus, which will allow you to build 22 additional market-rate units. As a result of the bonus, the developer receives approval to build a 122 unit subdivision where 15 of the units are affordable and 107 are market-rate. Even though none of the bonus units need to be affordable in Montgomery County, a developer cannot receive a density bonus until the development includes **more than** 12.5% affordable housing (which is the minimum baseline affordable requirement).

Other programs – including but not limited to Davis, California; Stamford, Connecticut; New York City, and the Chapter 40B program in Massachusetts – all require that some percentage of the "bonus units" to be affordable as well. In Stamford, anywhere from 1/5 to ¼ of the density bonus units that are granted must be dedicated to affordable housing (in addition to the baseline 10% affordable requirement under the ordinance). In Davis, California and in New York City, the calculation of the affordable percentage incorporates the density bonus units, thereby including them in the percentage required. So, for example, in New York City, the development receives a 33% density bonus, but 20% of the *total units* in the development must be affordable under the program. Similarly, under the 40B program in Massachusetts, the developer may receive an increase in density and other kinds of zoning relief, but 25% of the *total units* in the development must be affordable.

Some density bonuses are fairly standardized, while others are tailored to a specific project. Some are granted "as of right", while others are negotiated on a case by case basis. In reality, even most of the standardized bonuses that are listed "as of right" in ordinances often require some level of negotiation and approval from the local jurisdiction (such as the submittal of an inclusionary housing plan which must be approved by the local government).

Montgomery County, Maryland and Fairfax County, Virginia have standardized, sliding scale density bonuses and these bonuses are "as of right." Cambridge, Massachusetts (30% bonus); Chicago's downtown density bonus program; Davis, California (one for one); Highland Park (one for one); Madison, WI (standardized according to different zoning districts); New York City (33% bonus); and Tallahassee, Florida (25% bonus) also all have standardized density bonus provisions that are "as of right". This kind of approach provides developers with predictability and protection -- predictability because developers can incorporate the value of the density bonus into their pro-formas as they evaluate the feasibility of a site and protection because, in the short run, if the developer is the existing owner (and is therefore unable to negotiate for a lower acquisition price for the property), this bonus helps to defray the cost of the affordable housing requirement. In all of these situations, it is important to remember that there is still some interaction and negotiation with local planning staff over how the development comes together.

Other density bonuses are standardized, but not as of right – some sort of showing must be made for developers to receive the density bonus. For example, in Brentwood, California, the density bonus is 9% above the midpoint density of the density range established in the general plan and zoning code. But, in order to obtain this density bonus, the developer must apply for it and show that the bonus is necessary to the financial feasibility of the development. The state-mandated density bonus in California provides another example – it mandates a sliding-scale percentage bonus to a development depending on how much affordable housing (at which income levels) is included in the development. However, even though this provision in state law is technically "as of right", developers still must often negotiate and press very hard in order to secure this bonus from local communities that are inclined to limit density.

Still other bonuses are as "of right," but not standardized – they are somewhat tailored to each development or to different districts. Stamford, Connecticut provides one example as previously described and Chicago provides another. In Chicago, the Affordable Requirements Ordinance (ARO) requires any development that receives an increase in residential density to set aside ten percent (10%) of the housing units as affordable. This ordinance effectively operates as a density bonus provision tied to an affordable housing requirement, but the developer must negotiate for the appropriate density increase, taking into account the fact that ten percent (10%) of the total units in the development will need to be affordable.

Finally, density bonuses can be negotiated and tailored to each individual development. Again in Chicago, under the Chicago Partnerships for Affordable Neighborhoods (CPAN) program, developers can negotiate with the local alderman and city for a density bonus or zoning change. In a CPAN development, the alderman and city will require at least ten percent (10%) affordable housing but whether a density bonus will be granted is a matter of development-specific negotiations. There is no zoning bonus or density bonus "as of right" and there is no standardized density bonus or zoning bonus that one receives. Similarly, in Carlsbad, California, developers may also apply for a density bonus or other cost offsets; these requests are negotiated on a case by case basis. According to local planning staff, the city generally views the affordable housing requirement as a "cost of doing business" – so developers must make a convincing case in order to receive a density bonus.

Many communities do not offer density bonuses at all – for example: Boulder, Colorado; Brookline, Massachusetts; Longmont, Colorado; and Newton, Massachusetts. Some communities in California, like San Diego, San Francisco, and Sacramento, only offer the possibility of obtaining the state-mandated density bonus. And even then, very often, the bonus is not requested or used in these communities because of local resistance.

Standardized and "as of right" bonuses provide more predictability for all parties and more protection to developers; negotiated and discretionary bonuses allow more tailoring and flexibility. Both approaches can work and both address legitimate and competing interests between developers and local governments.

Zoning/Design Flexibility

Many programs provide a development with the ability to make adjustments in the zoning code that relate to the height, bulk, use, or design of the development. In some cases, these adjustments enable a developer to build more units or develop more floor area on a site. In fact, they are often necessary in order to make a density bonus provision effective or realizable (e.g. a development may need an additional floor of height or may need reduced lot sizes in order to add 20% more housing units to the development). In other cases, these adjustments provide relief in their own right that help to make a development more financially feasible.

Zoning/design flexibility can include, but is not limited to, the following kinds of relief: reduced setbacks, reduced minimum lot size requirements and reduced buffering requirements; increased height allowances; increased floor area ratios (FARs); reduced street widths; reduced landscaping requirements; reduced green space requirements; and reduced curb and gutter requirements.

Examples of programs using zoning/design flexibility include Brentwood, CA; Brookline, MA; Cambridge; Chicago's CPAN program; Davis, CA; Highland Park, IL; Irvine, CA; Longmont, CO (only if additional affordable housing beyond the baseline requirements are provided); Madison, WI; San Diego's citywide program; Sacramento, CA; Santa Fe, New Mexico; Santa Monica, CA; Stamford, CT; the State of California's Density Bonus law; and Tallahassee, FL.

Irvine, California offers reduced park-land set-aside requirements, which provides a very useful offset to developers. Santa Monica, California allows for a possible height bonus of 10 feet in non-residential districts. Sacramento, California provides flexibility on road widths and curbs and gutters; Cambridge, Massachusetts provides: a) increased FAR for the affordable units; b) decreased minimum lot area requirements (such that two additional dwelling units per lot are permitted for each additional affordable unit); and c) no variance is required to construct affordable units; and Tallahassee allows reduced setback and buffering requirements within a development covered by their ordinance.

These offsets most often involve some level of negotiation and tailoring to each particular project. In fact, most programs list these kinds of offsets very generally, thereby allowing the local government staff and council to work with a developer and the community to determine the specifics for each individual project.

Parking Reductions

Parking requirements often represent a very significant cost of development. In locations where transit options are more plentiful and where densities are higher, parking reductions make good planning sense for many reasons. In some cases, households buying or renting affordable units will own fewer cars than market-rate owners or renters. As a result, many programs include a parking reduction in their programs as a way to decrease the cost of creating an affordable unit and as a way to further other local planning goals related to density, walk-ability, air quality, and economic development.

Examples of programs with parking reductions include Brentwood, California; Brookline, Massachusetts (50% parking reduction for affordable units – only 1 unit instead of the standard two units); Davis, California; Denver (reduction of 10 parking spaces for each affordable unit above 10% affordable housing); Fairfax County, VA (parking reductions for mid-rise elevator buildings that contain affordable housing); Irvine, CA; Madison, WI; Sacramento, California; San Diego, California (must be negotiated on a case by case basis); Santa Monica, California; and the State of California Density Bonus law.

Of course, parking reductions (like increased density) are not always popular or are not appropriate in every situation. As a result, in many communities, they are discretionary and available only upon application (Brentwood, California; Davis, California; or San Diego) or only available when the developer takes additional steps beyond the baseline requirements of the ordinance (as in Longmont and Denver).

Property Use/Housing Type Flexibility

In many communities, zoning codes and districts often do not allow developments to mix housing types – such as single-family detached housing with duplexes, townhomes, and condominiums. But the ability to mix these housing types in the same development can make the inclusion of affordable housing more financially feasible.

For example, in Montgomery County, Maryland and in Fairfax County, Virginia, developers have successfully included affordable town-homes in luxury, single-family subdivisions by including two, three, or four townhomes within a building structure that is identical to the large, single-family home sitting next door. See the pictures below for examples.

Montgomery County, Maryland
Affordable Town Homes

Montgomery County, Maryland
Market Rate Single-Family Home

Fairfax County, Virginia
Affordable Town Homes

Fairfax County, Virginia
Market Rate Single-Family Home

Housing type flexibility can also include creative approaches such as "stacking town homes." In many market-rate town home developments, the square footage size of a single, market-rate town home can be quite large and can cover three or four floors. This often makes it possible to "stack" two affordable town homes within the footprint of what would otherwise be a single market-rate town home.

Other programs, such as Brentwood, California; Irvine, California; Tallahassee, Florida; Madison, Wisconsin; Sacramento, California; and the State of California's Density Bonus Law utilize similar provisions. Examples of this kind of flexibility can also be found in a number of locations in New Jersey.

Fee Waivers/Reimbursements/Reductions

Many programs waive fees, provide per-unit cash subsidies to developers to essentially "reimburse" them for fees paid, or allow fees to be deferred until units are sold or rented. While not providing the same level of financial boost to project viability as a density bonus, a well-designed fee waiver or fee reimbursement provision can add significant value to an inclusionary housing program. Some programs provide waiver fees or reimbursements on all the residential units; more often, programs provide the waivers or reimbursements on only the affordable units.

In Colorado, political disagreements as well as legal ambiguity over whether local governments can "waive fees" have led communities like Longmont and Denver to provide a per unit cash subsidy for the affordable units that provides the developer with the cash value of having a number of local fees waived on the affordable units. In both programs, the cash subsidy represents the only cost-offset available to developers unless the development includes more than 10% affordable housing.

Other communities increase the value of the fee reduction or subsidy as the affordability level of the affordable unit increases – the more affordable the unit, the higher the fee waiver for that unit. In Sacramento, California, developers can receive a $4,000 fee reduction subsidy for units made affordable to households at or below 50% of the AMI and a $1,000 fee reduction subsidy for units made affordable to households at or below 80% of the AMI.

Other communities that use fee waivers/reimbursements/deferrals include: Brentwood, California; Highland Park, Illinois; Irvine, California, Montgomery County, Maryland (for rental developments only), Madison, Wisconsin (also structured as a cash subsidy); San Diego, California; and San Francisco, California.

Reduced Interior Finishes/Reduced Unit Size

Another way to reduce costs within inclusionary housing developments is to allow the use of more affordable finishes in the affordable units and to allow the affordable units to be smaller in square footage than market-rate units with the same number of bedrooms.

Brentwood, CA; Brookline, MA; Chicago, IL; Highland Park, IL (finishes and unit size); Montgomery County, MD; and Sacramento, CA, among others, use this cost offset in their programs. However, for most communities, reducing cost on the affordable units in this regard does not mean sacrificing quality, sound building, energy efficiency, or ensuring sufficient room for affordable renters or homebuyers.

Thus, many programs draft their ordinances or program regulations in a manner that provides minimum unit sizes for the affordable units and that positively state which materials, appliances, or finishes must be the same between the market-rate and affordable units. For example, many ordinances require that: a) the bedroom mix of the affordable units be in equal proportion to the bedroom mix of the market-rate units; b) that the differences between the affordable units and the market-rate units not include improvements related to areas like energy efficiency (such as mechanical equipment and plumbing, insulation, windows, and heating and cooling systems); and c) that the gross floor area for the affordable units be: i) no lower than minimum square footage requirements set by the city for different bedroom size units; or ii) no less than some % of the gross floor area of the market-rate units (e.g. 75%).

Alternative Materials

Another option for a local jurisdiction is to allow the use of alternative materials in the construction of a development that includes affordable housing. For example, if a community typically requires 100% brick construction, a local government could allow the use of siding or hardy board in place of brick if the development includes affordable housing.

Brookline, Massachusetts allows the use of alternative materials but since the community places a premium on high-quality construction, the developer must apply for this option and must receive specific town approval.

Expedited Review/Approval Processes.

Time is money. Development approval processes can be notoriously long, difficult, and expensive. Many programs attempt to provide developments with cost-savings by giving inclusionary developments greater priority in the approval process. Whether these cost-savings materialize depends almost entirely on the efficacy of local implementation and administration.

Many programs offer expedited review/approval processes. These programs include: Brentwood, California; Chapel Hill, NC; Davis, CA; Denver, CO; Irvine, CA; Madison, WI; Montgomery County, MD; Sacramento, CA; San Diego, CA; and Tallahassee, FL.

It's very hard to know which programs do this effectively without a much more detailed, focused and in-depth study. For example, in Chapel Hill, North Carolina, an expedited approval process is the only cost offset listed in their program documentation. However, according to city staff in Chapel Hill, this offset is never used in practice.

However, the Chapter 40B program in Massachusetts provides a good example of how an "expedited approval/review process" can make a significant difference. In Massachusetts, zoning changes at the local level require approval through the "town meeting" process, which can be long, exhausting and quite difficult. The 40B law provides developments that include twenty-five percent (25%) affordable housing with a comprehensive permitting process that allows them to by-pass "town meeting" and to consolidate many of the numerous local boards in the approval process. The 30 plus years of success under the 40B program testifies to the value of this component. Furthermore, a recently-completed study in California indicates that a number of California communities have had some success with expedited permit processes.[x]

In Longmont, Colorado, developers who provide more than the baseline affordability requirement of 10% under the ordinance can receive an expedited permit process which will cut the approval timeline by 50%.

This offset offers potential cost savings that can improve financial feasibility, but its value in any location depends solely upon local implementation.

Tax Abatement/Tax Break/Tax Waiver

Some programs provide developments with some sort of tax abatement, break, or waiver, in order to help defray costs.

In Boulder, Colorado, all residential and non-residential development must pay a "housing excise tax" in order to help fund affordable housing efforts in the city. The housing excise tax is a "per square footage" tax, which currently amounts to $0.47 per square foot for non-residential development and $0.22 per square foot for detached or attached residential dwelling units. This housing excise tax serves as a linkage fee or tax that is meant to defray the cost of creating the affordable housing that will be needed as a result of the new commercial and residential development. All permanently affordable units (restricted to stay affordable in perpetuity) are exempt from the tax. The tax must be paid on the market-rate units or any affordable units with restrictions that are not permanent restrictions.

Also in Boulder, all residential and nonresidential development must pay a "development excise tax," which is imposed in order to raise funds for the cost of future capital improvements. The development excise tax acts as a linkage fee or tax that is meant to defray the cost of the capital infrastructure needs that will be created by new commercial or residential development. The current tax rates are as follows: $2.40 per square foot for nonresidential development; $5,401.35 per detached dwelling unit; and $3,477.25 per attached dwelling unit. If a development includes more than 20% affordable housing (the baseline requirement in the Boulder program) or makes the affordable units more affordable than required by the ordinance, then the development may receive a waiver for the development excise taxes as well.

In New York City, the 421A Property Tax program provides developers of residential housing meeting certain conditions to receive a 10-15 year tax exemption. For many years, beginning in the 1970s, this program played a very important role in helping to attract new residential development and redevelopment to New York City. The program has undergone reforms since its creation in the 1970s – there are now "exclusion zones" where affordable housing must be included in the development for the property tax exemption to be secured. Efforts are currently underway to further reform and modernize 421A to limit its application only to developments that include at least 20% affordable housing. Under New York City's inclusionary housing approach, specified "upzonings" can receive an array of cost offsets (33% density bonus, state and federal subsidies, and the 421A property tax exemption) if they voluntarily include at least 20% affordable housing in the development. So long as 421a continues to exist in some form, buildings that choose to include 20% affordable housing under large, targeted "upzonings" will receive the 421a property tax exemption.

Finally, Highland Park, Illinois uses a demolition tax applicable to teardowns/demolitions of single-family and multi-family structures in order to generate revenues for its local affordable housing trust fund. In situations where the demolition tax would apply to a market-rate development covered by the inclusionary housing ordinance, this demolition tax is waived for the affordable units.

Other Creative Approaches

A number of other offsets have been used by communities based upon location-specific situations or creative identification of costs to be reduced. A few examples include:

<u>Growth Limitations</u>

A number of California communities – specifically Morgan Hill, California have experienced success using their growth limitation policies as a tool in promoting affordable housing. Morgan Hill, California issues a limited number of permits each year under its growth limitation policy. Developers that include affordable housing in their permit applications are given priority for receiving an allocation of the limited number of building permits. Morgan Hill's approach has allowed it to enjoy some success with a voluntary program – something not easy to do in a high-cost area.

Boulder, Colorado also provides an exemption from its Residential Growth Management System (RGMS) to developments that agree to include 35% or more, permanently affordable housing – the baseline requirements in their program only require 20% affordable housing. Though Boulder's program has enjoyed success overall, its offer of an exemption from the RGMS has not made a significant difference in enticing developers to do 35%, instead of just 20% affordable housing.

Transportation Concurrency Exemption

Tallahassee offers an exemption from its transportation concurrency requirements for the affordable units. Under the transportation concurrency requirements, a developer must show that there is sufficient capacity in local roads and infrastructure to support the new development. The Tallahassee ordinance allows the developer to remove the affordable units from this calculation/determination.

Marketing Assistance

The City of Chicago and Longmont, Colorado (among others) offer and provide marketing assistance for the affordable units to developers. Since some developers may not have experience dealing with the marketing of an affordable product, this can save the developer time and money and can also help to ensure that the local government's objective of matching these affordable homes to people in need is met. If the marketing assistance is effective, the developer reaps the benefit of units being absorbed or leased up more quickly, which means interest savings and financial benefit to the project.

Finally, some communities allow developers to come forward with proposals for other ways to reduce costs – essentially inviting developers to propose an additional "cost offset" not listed in the program specifications. Both Tallahassee and the State of California's density bonus offer this option.

Local, State, or Federal Financing

Many programs will not allow a development to use local, state or federal funds unless: 1) the development includes more affordable housing than the baseline requirement or 2) the development includes housing that is *more* affordable than the baseline requirement for affordability (e.g. 10% at 50% of the AMI instead of 10% at 65% of the AMI)

However, Sacramento, California does allow developers to use local, state and federal funds in the inclusionary housing program and provides inclusionary housing developers with priority for those funds. But, the use of these funds is limited to multi-family developments – usually rental. Davis, California also allows developers the option to meet their inclusionary housing requirements by using federal, state or local dollars (if they can secure them).

Finally, New York City allows developers to use tax-exempt bond volume cap and 4% tax credits to meet the 20% affordable housing component on large upzonings. These subsidies are in addition to the 33% density bonus (provided over and above the upzoning that has already occurred) and the property tax exemption provided by the 421A program. New York City's approach reveals the true "cost" required to secure affordable units from developers under a purely voluntary approach.

B. No One Path to Success

There is no one path to success. Programs with and without cost offsets have enjoyed significant success in produce affordable homes and in generating fees to support affordable housing in other ways in the community.

Table 3.3: Success with Cost Offsets

Community	Threshold	% Requirement	Density Bonus	Other Incentives	Units Built or Approved/ Fees Collected or Committed
Montgomery County, MD (1974)	20 units	12.5-15%	0-22%	Yes	Over 12,000 units
Fairfax County, VA (1991)	50 units	5-12.5%	10-20%	Yes	1800 units
Cambridge, Mass. (1999 – passed mandatory program)	10 units	15%	30%	Yes	450 constructed – many more planned
Davis, CA (passed 1990)	5 units	25-35%	One for One Up to 35% by State Law	Yes	1800 units
Irvine, CA (2003)	All residential	15%	Up to 35% by state law	Yes	921 units $12.5 million
New York, NY (2005)	N/A – large targeted “upzonings”	20%	33%	Yes	A couple hundred constructed; 7,000 anticipated in next decade
Sacramento, CA (2000)	10 units – in new development areas	15%	Up to 35% by state law	Yes	2,999 units

Some programs succeed by providing a significant array of cost offsets and these offsets are "as of right" and standardized. Montgomery County, Maryland and Fairfax County, Virginia provide a fairly simple package of offsets. The most important offset that they provide – the density bonus – is "as of right" and fairly standardized. Both programs have enjoyed tremendous success. Montgomery County is regularly recognized as the nation's "poster child" for inclusionary housing – having created over 12,000 affordable units (over 1,000 of which have been purchased by the local housing authority to serve households below 30% of the AMI) in market-rate subdivisions across one of the nation's most affluent counties. The program has attracted over $500 million in private investment into affordable homes, has improved (not decreased) property values, and has helped to create a more diverse and vibrant county.[xi]

Some programs provide a significant list of offsets but these offsets are not as of right and they are not standardized – they must be negotiated and tailored to each program. In some of these programs, developers actually receive a fair amount of these offsets; in others, towns drive a harder bargain. Sacramento does not typically grant a parking reduction and only offers a density bonus to those developers who apply for the state-mandated density bonus provision. However, the city does offer an attractive array of other offsets to developers (fee waivers, subsidy loans/cash subsidies, expedited permitting, relaxed zoning and design standards, ability to mix housing types, etc.) and invites developers to apply for these offsets. Sacramento's numbers adequately tell the story; since 2000, the city has created almost 3000 affordable units (constructed or planned) with its program.

Whether as of right and standardized or negotiated and tailored, the inclusion of cost offsets and incentives can help to ensure a successful program. A recent report in California, which provides the most comprehensive review of inclusionary housing programs in California to date, asserts that the most successful programs in the state provide developers with a range of incentives.[xii]

However, programs can also succeed while providing little or nothing in the way of cost offsets. The affordable housing requirement is treated as a cost of doing business in the community – just like any another provision in the zoning code. Table 3.4 below shows that these kinds of programs can succeed as well.

Table 3.4: Success without Cost Offsets

Community	Threshold	% Requirement	Density	Other Incentives	Units Built or Approved/ Fees Collected or Committed
Boston, MA (2000)	**10 units**	**15%**	**No**	**No**	**893 Units $13.3 million**
Chapel Hill, NC (2000)	**5 units**	**15%**	**No**	**Expedited Approval – Never Used**	**288 units $1,132,000**
San Francisco, CA (2003, amended '06)	**10 units**	**15%**	**No**	**Fee Waivers**	**1593 Units Built 250-350 planned per year for next couple years $67 million**
Longmont, CO (1995, amended '01)	**Any size for annexations; 5 units elsewhere**	**10%**	**None for baseline 10%**	**Fee Waivers**	**1270 Units (from construction and fee in lieu funds) $4,002,126**
Boulder, CO (2000)	**All residential**	**20%**	**No**	**Waiver of housing excise tax for**	**450 units $1.5 million**

				permanent affordable units	
Davidson, NC (2001)	**All development except conservation easement subdivisions**	**12.5%**	**None**	**None**	**265 units $500,000**
Carlsbad, CA (1993)	**7 units**	**12.5%**	**Can apply**	**Can apply**	**1600 units**

The numbers speak for themselves – Boston and San Francisco's production figures (both in terms of units produced and fees collected) are impressive. Similarly, Chapel Hill and Boulder, for relatively modest-sized cities, have generated quite a bit of production since passage of their programs; their programs are significantly supplementing the supply of affordable housing that would otherwise be available in their communities. And all of these communities are adding affordable housing supply that would otherwise not be there without using their federal, state, or local housing dollars. They are harnessing the power of their expensive housing markets to help create these much-needed affordable homes. These cities have continued to see significant market-rate activity on the heels of passing their programs.

Programs without cost offsets can succeed for a number of reasons. Large urban centers like Boston and San Francisco benefit from their unique location and strong real estate markets. Developers want to be in both locations because people and businesses want and/or need to be there. The strong land values and housing demand help to make a program without cost-offsets feasible – for example, there's room to absorb reductions in highly-appreciated land costs. They also benefit from the fact that many other communities around them utilize some form of inclusionary zoning. This reality helps to reinforce their policies as a standard part of the marketplace. As a result, inclusionary housing is much less likely to act as a competitive disadvantage that encourages developers to "take their business elsewhere."

Affluent university towns like Chapel Hill, North Carolina and Boulder, Colorado do not have a statewide regulatory framework pushing them or their neighbors to implement inclusionary housing. To the contrary, Colorado and North Carolina state law present obstacles to the creation of local inclusionary housing programs. However, Chapel Hill and Boulder are extremely popular locations that provide a high quality of life – as a result, developers want to develop there. Communities like Longmont, Colorado and Davidson, North Carolina are in a similar position. As a result of their desirability, these locations enjoy a bit of monopoly power; they can impose additional requirements on development up to a point because they know that the development community will still want to develop there.

The experience of these communities indicate that communities enjoy a measure of "monopoly power" and have more ability to impose an affordable housing requirement without providing an explicit or additional "cost offset" when all or some of the following factors are at play,

a) where housing markets are strong;

b) where communities are viewed as highly desirable locations for people, business, culture, etc.; and

c) where there is a statewide regulatory framework pushing inclusionary housing approaches or a market-practice in the surrounding area that incorporates inclusionary housing into the market in that area.

Inclusionary housing approaches are very place-specific – driven by local goals, local markets, the presence or absence of a statewide regulatory framework, and of course, local politics. As a result, programs with and without cost offsets can succeed. Success is determined not by their presence or absence, but rather by understanding the relevant market and political factors involved and then designing the *appropriate* offsets. If offsets are used, it is more important to have a *well-designed* list of the *appropriate and effective* offsets rather than a *long* list of *potential* offsets that do not fit the local context. Note that Montgomery County does not have a long list of offsets – it has a short list of benefits that best fit its local market and local politics. This is not to say that a long list of offsets is always bad; to the contrary, a long list of well-designed offsets can help to create a program that has the flexibility to succeed for different types of development. But success is not determined by *how many* offsets a program has but rather *how many meaningful and useful* offsets a program has. Communities that succeed take the time to figure out what works and then adjust the program as they implement it.

C. Implications for New Jersey

The national experience and the review of specific programs from around the country indicate that programs with and without explicit cost offsets can succeed. So, where does that leave New Jersey in its efforts to craft new third round rules?

To help shed some light on this question, let's first return to the experience of a nearby neighbor – Massachusetts. Like New Jersey, Massachusetts faces high housing costs, limited amounts of vacant and developable land, a plethora of local communities, and a mixture of urban, suburban, and rural areas. Also, similar to New Jersey, Massachusetts has a statewide regulatory framework under Chapter 40B. However, the scope of the statewide regulatory framework in Massachusetts is slightly more limited in scope that in New Jersey. In Massachusetts, only towns with less than 10% affordable housing are subject to possible "builder's remedy" appeals to the Housing Appeals Committee, while in New Jersey the constitutional requirement to zone for affordable housing applies to *every* community. Nevertheless, the experience of communities in Massachusetts with Chapter 40B and with local inclusionary housing ordinances can inform efforts in New Jersey.

Chapter 40B itself clearly indicates the power of density bonuses – it is most often a density bonus negotiated by the developer with the town that subsidizes the cost of the 25% affordable housing (for households at or below 80% AMI) in the private development. This approach, as mentioned earlier, can boast an impressive record of production – now over 54,000 housing units have been built or approved under Chapter 40B, with over 50% of those units reserved for and affordable to household at or below 80% of the AMI.[xiii] Chapter 40B represents a large and growing share of all the affordable housing production in the state and is now responsible for well over 70% of the affordable housing production in the metro region outside of Boston.[xiv] It also accounts for much of the market-rate production and is creating some of the most affordable market-rate housing in the state.[xv] For all these reasons, it is a testament to the power of density coupled with an affordability requirement, to stimulate both market-rate and affordable housing production.

However, the Chapter 40B experience does not suggest or prove that massive or large density levels are needed in order to stimulate production or create affordable housing. Nearly 2/3 of the homeownership developments built under 40B (at least 25% affordable) were built at densities of 5 units per acre or less. 83% were built at less than 8 units per acre. Of the 140 homeownership developments, densities ranged from .7 units per acre to 25 units per acre, with the highest densities in the cities. In rental developments, densities ranged from 4-50 units per acre, with 50% of all rental developments built at between 10-19 units per acre.[xvi]

Furthermore, the Chapter 40B experience does not stand for the argument that local inclusionary housing ordinances always need cost offsets in order to work. Without a doubt, the production from Chapter 40B in Massachusetts is unrivaled by any other affordable housing initiative utilized in the state (including any federal or state housing subsidy programs and including local inclusionary housing programs), thereby demonstrating the usefulness of density as a production tool. However, the production from local inclusionary housing programs is growing and significant nonetheless. As stated earlier, many communities in Massachusetts have adopted local inclusionary housing provisions of one kind or another (at least 118 as of 2002). Towns like Lexington, Bedford, Andover, Cambridge, Burlington, Danvers, and Woburn have used affordable housing requirements or incentives to add a significant number of new affordable housing units to their local inventories. Similar to the national scene, some of these programs include cost offsets and some do not.

The Massachusetts experience indicates that density bonuses provided under a statewide regulatory framework can be a powerful tool for creating affordable housing as part of market-rate developments in high-cost areas. However, this experience also indicates that the underlying density levels can be rather modest in most cases. Furthermore, the experience also demonstrates that local inclusionary housing programs can be successful at creating affordable homes and apartments as well, with or without density bonuses.

In New Jersey, for almost two decades, under the statewide regulatory framework created by the Fair Housing Act and administered by COAH, hundreds of towns used “de facto” inclusionary housing programs to create thousands of affordable units (½ of the affordable units had to be affordable to households at or below 50% of the AMI and ½ had to be affordable to households at or below 80% of the AMI). Under this approach, towns provided developers on “inclusionary sites” with the minimum COAH-prescribed, “presumptive density” of six units per acre, with a 20% affordability component (See NJ Reg. 5:93-5.6b). In order to allow the inclusion of single-family detached homes in some of these developments, COAH allowed presumptive densities of four, five, or six units per acre with an affordable housing component of 15%, 17.5% or 20% affordable housing, respectively, to be used in some communities. In some parts of the state and for some types of development, presumptive densities above 6 units per acre were provided (See NJ Reg. 5:93-5.6c). Towns often allowed developments to mix housing types (e.g. townhomes and single-family detached homes, etc.) and in some communities and in some situations, additional benefits were provided to developers (e.g. setback relief, possible parking reductions, etc.). The kinds of cost offsets listed in this section of this report should be familiar to developers and towns in New Jersey because they have implicitly been part of the New Jersey experience for the past two decades.

Many towns successfully created inclusionary developments under this framework and/or collected "fees in lieu of" construction of affordable units, both of which contributed to helping towns meet their Fair Share Obligations under state law. For example, Lawrence, New Jersey, used inclusionary development sites to help create 729 new construction units (with 86 more zoned/approved) between 1987 and 2003.[xvii] They also collected $5,786,271.81 in development fees and fee in lieu payments.

South Brunswick used inclusionary housing sites from 1987 to 2003 to help create 625 units of housing (with another 130 approved/zoned for affordable housing) and collected $6,147,392.28 in developer fees.[xviii] Meanwhile, Raritan created 194 units and collected $2,486,351.67, using some of these funds to then help create affordable housing in Raritan.[xix] Raritan has generally not provided developers with any costs-offsets beyond "presumptive densities." They have worked with developers to make developments more feasible by providing design waivers – on one deal they waived the parking requirement for the affordable units.

New Jersey enjoyed two decades of successful inclusionary housing programs – constructing over 36,000 units of affordable housing (at least 10,000 of these units were created by inclusionary housing approaches) and serving income levels lower than those served in Massachusetts under Chapter 40B and lower than most inclusionary housing programs nationwide.[xx] The New Jersey programs succeeded by providing presumptive density levels and, in some cases, by providing additional cost offsets, many of which have been described in this report. Given New Jersey's state regulatory framework, which is the most extensive of any state regulatory framework in the nation and which succeeded in making inclusionary housing policies a large part of the marketplace in New Jersey, it is not surprising that presumptive density levels worked well as a "cost offset" or "incentive" during the last two decades. The presumptive density levels prescribed by COAH in Round II are in the range of those used over the 30 plus year history of Chapter 40B; and Chapter 40B operates under a more limited, though still extensive and effective, statewide regulatory framework.

The national experience (including Massachusetts) confirms that approaches with and without cost offsets can work. But local context matters most. New Jersey has the most extensive statewide regulatory framework in the nation; it has strong, high-cost real estate markets in many locations; and most importantly, it has two decades worth of experience at providing cost offsets and incentives to developers through presumptive densities. COAH should draw upon these lessons as it crafts the Third Round Rules.

D. Best Practice: Reserving Local, State, and Federal Financing Subsidies and Enhanced Local Offsets for Projects Exceeding Baseline Affordability Requirements

A number of programs specifically state that no local, state, or federal subsidies can be used on a project covered by the local inclusionary housing program unless and until the project exceeds the percentage (%) of affordable housing required by the ordinance and/or the affordability levels for the affordable units exceed the baseline requirements in the ordinance. For example, Brentwood, San Diego, and San Francisco, California; Boston, Cambridge, and Newton, Massachusetts; Boulder, Denver, and Longmont, Colorado; Chicago and Highland Park, Illinois; and Madison, Wisconsin all explicitly operate this way.

As previously mentioned, some programs reserve a density bonus (usually the most lucrative offset) for those developments that exceed the baseline affordability requirements. For example, in Denver, Stamford, and even in Montgomery County, no density bonuses are granted unless and until more than the baseline affordable housing requirements (% and/or income level) are provided.

In Denver, the 10% density bonus, parking reduction, and expedited permit process are only available once a developer agrees to include more than 10% affordable housing (which is the underlying requirement). For every affordable unit provided above 10%, the development receives the right to build one additional market-rate unit and the development gets a reduction of ten parking spaces. If the development creates affordable units serving households below 60% of the AMI (below the baseline requirement of 65% or 80% of the AMI), then the development also becomes eligible for higher per unit fee reimbursement payments (up to $10,000 per each affordable unit below 60% of the AMI up to 50% of the development – as opposed to only $5,500 for affordable units at or below 80% or 65% of the AMI).

In Stamford, 10% of a covered development must be affordable; if a developer chooses to access a density bonus, an additional portion of the bonus units must also be affordable (1/5 or 1/4, depending on the zoning district in which the development is located).

In Longmont, Colorado, a development can only receive the majority of the cost offsets available in the program if the development does more than the baseline requirements. If a developer includes 10% affordable housing, he or she may receive a Development Fee Reduction payment of 20-50% per affordable unit. In order for the development to be eligible for additional cost-offsets, the following higher standards must be met:

For Sale Units:	12% affordable below 70% AMI; 15% affordable with ½ affordable below 70% AMI and ½ affordable below 80% AMI; or 20% affordable below 80% AMI
Rental Units:	12% affordable below 40% AMI 15% affordable with ½ affordable below 40% AMI and ½ affordable below 50% AMI; or 20% affordable below 50% AMI

If the standards above are met, then the development becomes eligible for an expedited review, a density bonus, flexible zoning and development standards (lot size, setback, parking relief), additional fee waivers and fee deferrals, and marketing assistance.

In Boulder, Colorado, there is essentially only one cost-offset available to developments that meet the minimum requirement of 20% affordable housing – waiver of the housing excise tax on the ***permanently*** affordable units. The program's other possible cost offsets – waiver of the development excise tax (which applies to both affordable and market-rate units) and an exemption from Boulder's growth management requirements – only apply if more than 20% affordable housing is provided (35% affordable in the case of a waiver of the growth management requirements).

Boulder, Colorado has gone beyond mere policy tweaks -- it has aggressively used its inclusionary ordinance to create developments that provide more than 20% affordable housing and where some portion of the affordable housing is affordable to households with incomes lower than those prescribed by their ordinance. Take for example the development known as the Holiday Neighborhood. Boulder Housing Partners, the local public housing agency, created this 27-acre development, which sits on an old drive-in movie theater site, using a combination of: a) land it acquired from the city; b) the city's inclusionary housing requirements; and c) traditional state and federal housing subsidies.

The result is a 333 unit residential development that includes small local businesses, a two-acre park, community gardens, and an extremely diverse mix of much-needed affordable housing in Boulder. BHP acquired parcels for the site from the city and then sold sites to developers who agreed to include 40% affordable housing in the development (20% affordable housing is required by Boulder's ordinance) and to comply with highly specific design requirements.

The development consists of 138 affordable units and 195 market-rate units. BHP purchased 49 of the affordable units from developers at the affordable, for sale price under the inclusionary housing ordinance. These 49 rental units are owned by BHP – 29 are reserved for households at or below 40% of the AMI and 20 are reserved for households at or below 50% of the AMI. 3 of the rental units will serve households earning at or below 30% of AMI as Emergency Family Assistance Units and another 10 of the rental units will serve formerly homeless households with Section 8 and McKinney

Homeless Assistance subsidies. The other 86 affordable units are affordable for-sale units sold to households at or below 60 or 80% of the AMI.

If this had been developed as a basic inclusionary housing project, it would have created about 66 affordable units, all of which would have been targeted at households earning somewhere between 60-80% of the AMI. Instead, this project includes 138 affordable homes and apartments (twice as much); 15% of the units serve households at or below 50, 40, or 30% of the AMI; the project provides a true mix of incomes and housing types; and the housing authority generated funds from the sales proceeds of the land to help finance additional development activities.

IV. Fee In Lieu

Good public policy usually requires some degree of flexibility and adaptability. It is impossible for any public body to anticipate every situation; in addition, it is foolish to assume that any policy can address the public problem it is attacking through one sole method alone. For these reasons, many local governments include a "fee in lieu" provision in their inclusionary housing program.

These provisions allow developers to pay a fee "in lieu of" building the affordable units on site in their otherwise market-rate development. As indicated above, this serves two purposes – flexibility and versatility. It allows for flexibility because where it is extremely difficult to build units on-site (due to the parcel shape, market conditions, size of the development, land costs, amenities in the development that impose high assessment costs on affordable homebuyers, etc.), this option provides another means of compliance. It allows for versatility because the local jurisdiction gains an additional resource to attack the affordable housing crisis.

Inclusionary housing ordinances often tend to produce affordable housing for populations earning at or above 60% of the AMI and in many cases, they exclusively serve populations with incomes higher than that. In addition, if "for sale" housing is the housing being developed by the private market, the inclusionary housing program will most likely only produce affordable "for sale" housing. If a city needs and wishes to address other aspects of the housing crisis (such as preservation, creation and subsidy of rental units, serving the working poor, etc.) then a fee in lieu provision, if properly structured, can come in quite handy. In an era where federal housing funds have been steadily declining in real terms for three decades and where state housing funds are far from sufficient to plug the gap, a fee in lieu provision can raise much needed revenue at the local level that can be used flexibly by the local government to serve the full spectrum of housing needs (homeownership, rental, rehab and preservation, rental subsidies to existing properties, seniors, efforts to end homelessness, efforts to create workforce housing, etc.) in a number of creative ways.

Most programs use some sort of fee-in-lieu provision. Looking again to the state with the greatest number of formal programs – California -- a 2003 survey of programs there revealed that 81% of all programs utilize some sort of fee in lieu provision.[xxi] A recently released study in 2007 examining programs in California argues that the most successful programs provide developers with numerous "in lieu of" options for compliance, including fees in lieu.[xxii]

A. Calculating a Fee in Lieu Provision

Fee in Lieu Provisions can be calculated in many different ways and applied in a number of different ways. Listed below in Table 4.1 are seven fee-in-lieu methodology categories, an example of each, and a community where this example exists.

Table 4.1: Fee In Lieu Methodologies

Methodology	Example	Community
Subsidy Differential	Difference between the Price of a Market-Rate Unit and an Affordable Unit X Number of Affordable Units Required	Cambridge, Massachusetts
Replacement Value/FMV of Affordable Unit	Land + Hard Costs + Soft Costs = Replacement Value of Affordable Unit X Number of Affordable Units Required $115,692 (for sale, detached housing) $75,528 (for sale, attached housing) $61,562 (high density rental) $75,604 (low density rental)	Longmont, Colorado
Cost of Land	125% of the imputed cost of land X Number of Affordable Units Required	Montgomery County, Maryland
% Cost of Market-Rate Unit	10% of the Average Sale Price of the	Madison, Wisconsin

	Market-Rate Units X Number of Affordable Units Required	
Tied to Price of Affordable Units	25% of AMI – Up to 240% of the median income of Stamford 50% of AMI – Up to 145% of the median income of Stamford 60% of AMI – Up to 110% of the median income of Stamford X the Number of Affordable Units Required	Stamford, Connecticut
Linkage Fees	Affordable Housing Base Fee X Floor Area Base Fee = $28.15/sq. foot for ownership Base Fee = $24.10/sq. foot for rental	Santa Monica, California

These seven methodological categories are explored "in-depth" below with examples form numerous locations around the country.

Subsidy Differential: Some measure of the difference between the price of a market rate unit and the price of an affordable unit

In many local governments, the fee in lieu is meant to provide the local government with sufficient funds to go somewhere else in the community and create an affordable home or apartment. After all, the purpose of the inclusionary housing program is to create affordable housing in the community. If the development in question is not going to produce that affordable unit, then the local government needs to receive a fee in lieu of that unit that is large enough to allow it to create an affordable unit elsewhere in the community. One way to accomplish this is to collect the amount needed to subsidize a market-rate unit so that it can be sold or rented at a price affordable to low or moderate-income households. This is known as a "subsidy differential" fee.

In order to meet this objective, many communities base their fee in lieu on some measure of the difference between the price of a market rate unit and the price of an affordable unit. Three basic options on this approach are listed below:

> a) the actual difference between the market-rate price and the affordable price in that specific development (or some % of that);
>
> b) a flat amount meant to provide some reasonable estimate of the cost difference between market-rate housing and affordable housing in the community; and
>
> c) a square footage cost differential in the community.

This amount of money should be the amount that is necessary to essentially "write down" the cost of market-rate units elsewhere in the community to the affordable price. Of course, most communities end up setting their actual fee in lieu amount at a % of this initial calculation because the full difference between a market-rate unit and an affordable unit can be so large ($250,000 per affordable unit or more) that a developer would almost never choose this option. Since most communities want developers to pay the fee in at least some situations, the actual subsidy differential amount is reduced to something more reasonable.

The difference arrived at by these methods is then multiplied by the number of affordable units required in the covered development to obtain the "fee in lieu" amount for the development.

<u>Estimating the Difference Between the Price of a Market Rate Unit and the Price of an Affordable Unit (or some % thereof)</u>

Cambridge, Massachusetts sets its fee in lieu amount at the actual difference between the price of the market-rate unit and the price of the affordable unit, which makes the fee amount extremely large. Because the fee can only be paid in very limited situations upon approval by the City Council and because the fee is set so high, no developer has ever paid the fee in lieu in Cambridge. Cambridge would rather secure hard units so this fits with their policy objective.

In Boston, Massachusetts, the fee per affordable unit on a for-sale development is **the greater of:** a) ½ of the difference between the affordable and market-rate price OR b) $200,000. In rental developments, the fee in lieu is set at $200,000 per affordable unit, an amount meant to approximate the value of the difference between affordable and market-rate.

In Chapel Hill, the fee is the amount that is necessary to subsidize a market-rate unit in the development so that it is affordable to an eligible household under the program X the number of affordable units required. Chapel Hill has a policy, not a formal ordinance (though it is the process of writing one). As a result, in practice, the fee is quite often negotiated with the developer.

Flat Amount Estimating the Cost Differential (or a portion thereof)

Some communities develop a flat fee in lieu amount that is meant to "estimate" the amount needed to make up the difference between an affordable price and a market-rate price. See Table 4.2 below for details on some of these communities. Most of these communities complete an analysis to determine how much of the difference between a market-rate unit and an affordable unit should be used for the base amount of the fee in lieu.

For example, in Highland Park, the fee in lieu (which is currently $100,000 per affordable unit) is derived from the difference between the top market-rate price in the lower sixth of the local market (according to MLS listings) and the affordable price for a household of four at 80% of the AMI. If the median market-rate price had been used, the fee in lieu would have been $249,600 and if the top price in the lowest third had been used, it would have been $164,600. The $100,000 figure was deemed to be a much more feasible, realistic, and reasonable number – one large enough to encourage on-site development while also acting as a realistic figure to pay in certain situations. Under Highland Park's ordinance, the fee in lieu is only an "as of right" option for developers of single-family detached housing that are building fewer than 20 units.

Carlsbad, California chooses to only charge 15% of the subsidy amount necessary to write-down the cost of a market-rate unit to the affordable level (affordable price for household at 80% AMI), which makes the current fee-in-lieu payment a paltry $4,515 per affordable unit. Carlsbad is the extreme example here. However, Carlsbad only allows developments with 6 or fewer units to pay the fee, thereby reserving its use for small developments where it may be economically and spatially difficult to incorporate affordable units and also financially difficult to pay a large fee in lieu amount.

San Francisco adds a twist that the other communities in Table 4.2 below do not. San Francisco takes the base fee and then multiplies it by the percentage affordable housing required as if the builder were building "off site" (off-site development under the San Francisco ordinance requires that the developer build 1.5 times the amount of affordable housing required "on-site" – e.g. 20% off site instead of 15% on-site). This provides a strong incentive for on-site development, but if the developer chooses to pay, then the community will receive a very healthy fee in lieu payment – one significant enough to make some difference in a high-cost market like San Francisco.

Table 4.2 below provides a list of municipalities with "flat" fees in lieu.

Table 4.2: **Flat Fee in Lieu Estimating Cost Differential Between Market and Affordable (or some % thereof)**

Community	**Fee in Lieu Amount**
Carlsbad, California	$4,515 per unit
Chicago	$100,000 per unit
Highland Park, IL	$100,000 per unit

Brentwood, CA	$74,470 (units serving 120% of AMI or below) $182,393 (units serving 80% of AMI or below OR for units in developments with 5-9 units) $243,536 (units serving 50% of AMI or below)
Boulder, CO	$103,000 (Attached Unit) $121,000 (Detached Unit)
San Francisco, CA	$187,308 (Studio) $256,207 (1 BR) $343,256 (2BR) $384,562 (3BR)

Square Footage Cost Differential

Davidson, NC uses a Square Footage Cost Differential to make this estimate. See below

Fee In Lieu = [Median Price/Square Foot for Market-Rate Housing – Median Price/Square Foot for Affordable Housing] X Median Square Footage for an Affordable Unit

This amount is then of course multiplied by the number of affordable units required to arrive at the total fee in lieu amount for the development.

Replacement or FMV of the Affordable Unit: Estimating the Cost or Replacement Value of an Affordable Unit (or some % thereof)

Some communities don't use the "subsidy differential" between a market-rate and affordable unit as a guide in determining the amount necessary to create an affordable unit elsewhere in the community. Instead, these communities attempt to estimate the replacement cost or value of an affordable unit (or some % thereof). Essentially, the community is saying, "If you're not going to build us an affordable unit, then we want a fee to cover the cost to construct an affordable unit."

Denver, Fairfax County, and Longmont, Colorado provide three pretty straightforward examples of this approach. Denver charges ½ of the affordable price for each affordable unit not constructed. Fairfax County charges the "fair market value" of the affordable unit.

Longmont, Colorado's fee represents the "replacement value of the affordable unit," defined as what it would cost to contract with a non-profit to build the affordable housing unit. Thus, the fee per affordable unit = Cost of Land + Hard Costs + Soft Costs. In Longmont, this analysis currently produces the following fee in lieu amounts:

$115,692 (for sale, detached housing)
$75,528 (for sale, attached housing)
$61,562 (high density rental)
$75,604 (low density rental)

Similar to Carlsbad, Davis, California is not interested in receiving a fee in lieu in most situations. But, in situations where they do prefer to receive a fee, they do not want to discourage market-rate development. As a result, the community of Davis bases their fee on **½ of the amount of subsidy needed to build an affordable housing unit on donated land**. Not only do they take the cost of land out of the equation, but they divide the result by two. The fee can only be used in developments located in the downtown core and even then, only on developments with fewer than 16 units. Davis did not want to deter redevelopment of its downtown core in any way and anticipated some feasibility issues with downtown development. The fee is $37,000 per affordable unit. For Davis, this approach makes sense. In most developments, they get units or land. In the downtown core, in developments of 16 or fewer units, they get fees.

Cost of Land

Other communities base their fee in lieu upon the cost of land. Montgomery County, MD bases its fee in lieu upon 125% of the imputed cost of land (with adjustments made for different types of development – e.g. high-rise development). Irvine, CA charges $12,471 per required affordable unit, which represents the fair market value of the cost of acquiring the requisite amount of land needed for the required affordable housing units, assuming that you can build at 25 units per acre.

Chicago’s downtown density bonus program is a voluntary inclusionary housing program. It was created as part of the historic re-write of Chicago’s zoning code and took effect in 2004. It is an attractive program because developers most often want to achieve more FAR in the downtown district than is allowed under the base zoning code established by the zoning rewrite. In order to achieve that additional FAR, developers must either: 1) dedicate 25% of the additional FAR to affordable housing; or 2) they must pay a fee in lieu.

The fee in lieu = [the Cost of land per square foot in the area of the downtown where the development is located X .85] X the additional Floor Area in square feet that is granted.

In essence, the developer is purchasing additional FAR and the value of that FAR is based on the cost of land in that area.

% Calculations of Price/Cost of Market-Rate Units

Brookline, Massachusetts; Newton, Massachusetts; and Madison, Wisconsin all base their fee in lieu payments upon a percentage of the price for the market-rate units.

Unlike most fee in lieu provisions, Newton charges 3% of the market-value on each market-rate unit – the base fee in not multiplied by the number of affordable units required. However, this only applies to developments of 6 or fewer units. Conversely, Madison, Wisconsin sets the fee in lieu at 10% of the average sale price of the market-rate units X the number of affordable units required.

Like Newton, Brookline charges a fee amount to each market-rate unit. If the developer makes this payment, no affordable units are required. The fee in lieu, which is called a "Trust Payment," is only available to developments of 15 or fewer units.

For ownership units, the Trust Payment = (Sales Price of the Market Rate Unit - $125,000) X the Contribution Factor. For rental units, the Trust Payment = [Market Value of the Development – (number of units X $125,000)] X Contribution Factor.

The Contribution Factor is as follows (for both ownership and rental): 6 units = 3%; 7 units = 3.75%; 8 units = 4.5%; 9 units = 5.25%; 10 units = 6.00%; 11units = 6.75%; 12 units = 7.50%; 13 units = 8.25%; 14 units = 9%; 15 units = 9.75%.

These fees do not even begin to approach the true cost of creating an affordable unit elsewhere in the community – especially in communities like Newton and Brookline. Instead, these fees serve as little more than modest revenue generators for local housing trust funds. However, they only apply to smaller developments in Newton and Brookline and the fee in lieu can only be paid in limited situations in Wisconsin, based upon city consent.

In Lieu Payments Tied to the Price of Market-Rate Units or Affordable Units

In at least two communities, the fee in lieu is tied in some way to the affordability level of the affordable units not being built or to the price of the market-rate units in the development.

In Tallahassee, Florida, the level of the fee in lieu directly correlates with the level of the prices of the market-rate units in the development – the higher the market-rate prices, the higher the fee in lieu amount. The rationale here is clear: if the developer is building more moderately-priced market-rate units, he should not pay as high a price for a fee in lieu. These moderately-price market-rate units (though not affordable to the households targeted by the ordinance) do less to exacerbate housing prices in the community than high-end luxury units and help to create more housing options in the local market for households of more modest means.

Here's how the fee works -- if the average market-rate prices in the development are 110% of the Affordable Sales Price, then the fee in lieu will be $10,000 per affordable unit required. If the market –rate prices are 175% of the Affordable Price, then the fee in lieu will be $20,000 per affordable unit required. However, Planned Unit Developments (PUDs) and Developments of Regional Impact (DRIs), both of which are covered by the inclusionary requirements, cannot pay the fee in lieu -- PUDs and DRIs are both developments of significant size. This will ensure that some of the largest developments include affordable units on site; however, for developments that are not PUDs or DRIs, the fee in lieu amounts will not provide the funds necessary to subsidize the creation of an affordable unit elsewhere in the community.

In Stamford, CT, the fee is gauged to the affordability of the affordable units that are not being built – the more affordable the unit required, the higher the fee in lieu required. The rationale here is well-founded: the town needs a higher fee in lieu amount to create an affordable unit to someone earning 50% of the AMI than it does to crate an affordable unit to someone 80% or 120% of the AMI. Notice also that the fee in Stamford is tied to the overall median income. As documented above, Brentwood, California, which uses a "subsidy differential" approach, thereby also ties the fee in lieu amount to the level of affordability on the affordable units. See Table 4.3 on the next page for a summary of the Tallahassee and Stamford fee in lieu amounts.

Table 4.3

Tying a Fee in Lieu to the Price of Market-Rate Units or Affordable Units

Community	Fee in Lieu
Tallahassee	Based on Average Market-Rate Unit Price: 110% of the Affordable Sales Price = $10,000 per affordable unit required 110%-175% of the Affordable Sales Price = $15,000 per affordable unit required 175%-225% of the Affordable Sales Price = $20,000 per affordable unit required Over 225% of the Affordable Sales Price = $25,000 per affordable unit required
Stamford	25% of AMI – Up to 240% of the median income of Stamford 50% of AMI – Up to 145% of the median income of Stamford 60% of AMI -- Up to 110% of the median income of Stamford

Linkage Fee Approaches

Some communities, in addition to or in place of a fee in lieu payment, charge an affordable housing fee to residential and/or non-residential development. This fee is meant to offset or pay for all or portion of the affordable housing demand generated by that development. Quite often, these fees are referred to as “linkage fees” because they are assessed in order to address the linkage between the development and the demand/need for affordable housing created by that development. Boston, Boulder, San Francisco, and Santa Monica all use this kind of fee. Santa Monica uses this fee as its “in lieu payment” for its inclusionary housing requirements. In Boulder, Boston, and San Francisco, the linkage fee is separate from and in addition to any fee “in lieu of” provision under the inclusionary housing program. Boston and San Francisco use this fee to collect revenue from non-residential development, while Boulder uses this fee to collect revenue from both residential and non-residential developments – all permanently affordable units are exempt from this fee in Boulder.

Table 4.4: Affordable Housing Linkage Fees

Community	Housing Linkage Fee
Boston (commercial only)	$8.62 per square foot (first 100,000 square feet of commercial feet exempted)
Boulder, Colorado	Housing Excise Tax $0.47 per square foot (nonresidential) $0.22 per square foot (residential)
San Francisco, CA (commercial only)	Net Additional Gross Square Footage X Base Fee Amount for Different Industries = Total Fee Entertainment: $13.95 per sq. foot Hotel: $11.21 per sq. foot Office Space: $14.96 per sq. foot R & D: $9.97 per sq. foot Retail: $13.95 per sq. foot

Santa Monica, CA (commercial and residential)	Affordable Housing Base Fee X Floor Area Base Fee = $28.15/sq. foot for ownership Base Fee = $24.10/sq. foot for rental

San Diego also employs a fee on commercial development, which generates about $500,000 a year.

B. Policy Categories for Fee In Lieu Provisions

Like density bonuses or other cost offsets, a fee in lieu can be as of right or discretionary, standardized or negotiated. Like costs offsets, no one approach can be deemed to be the "successful" one because different localities in different markets have different goals. These local differences largely dictate the differences in approach. Four broad policy categories of fee in lieu approaches can be gleaned from the previous methods: 1) On-Site Programs; 2) Hard Unit Programs; 3) Revenue-Raising Programs; and 4) Balanced Programs. In addition to these four categories, many fee in lieu provisions (regardless of the category) often contain provisions meant to address policy dilemmas faced by inclusionary housing programs. These provisions will be examined in a fifth category below.

On-Site Programs

In expensive markets with high land costs, it can be extremely difficult to develop affordable housing –even with a large pot of public money to help subsidize the cost. Furthermore, one of the benefits of inclusionary housing is to incorporate the affordable housing with the market-rate housing in order to promote racial and economic integration and to help change the perception of affordable housing. Programs that want to encourage the creation of units *on-site*, in conjunction with the market-rate units, will usually do two things:

a) set the fee as close as possible to the actual cost of creating an affordable unit elsewhere in order to encourage on-site construction; and

b) make any option to pay the fee in lieu (to build off-site or to donate land) only applicable to situations where the developer applies to the city for such right and shows that the payment of the fee (or the off-site option) is necessary due to some sort of hardship or infeasibility and/or that the alternative form of compliance (e.g. the payment of the fee) will help to provide some sort of additional benefit to the city's housing policy.

Cambridge, Massachusetts has never collected any fee in lieu money because they have done such a good job of following through on both "a" and "b" above. They've set the fee extremely high (at the actual cost of the difference between the market-rate price and the affordable price) and they've restricted usage of that fee in lieu provision to its discretion in very limited situations where "significant hardship" has been demonstrated. Because Cambridge is fairly dense and very expensive, the city would rather secure hard units than fee in lieu money.

Communities like Montgomery County, Fairfax County, Virginia, and Chicago all have done a good job at encouraging on-site construction of units. Over three decades, Montgomery County has created 12,000 affordable units (including 1000 plus purchased by the housing authority for extremely low-income households) within market-rate subdivisions. Payment of the fee in lieu or use of other alternative compliance measure is limited to county approval and demonstration of need.

Over a decade and a half, Fairfax County, Virginia has created nearly 2,000 affordable units within market-rate subdivisions. Use of the fee in lieu provision there is limited to "exceptional cases" where the developer shows that building on-site would be physically impossible or financially infeasible.

Finally, over approximately five short years, the City of Chicago has created over 1000 affordable units on site through the Affordable Requirements Ordinance (ARO) and the Chicago Partnerships for Affordable Neighborhoods (CPAN) programs (which are the inclusionary housing programs geared to on-site production). The city's fee in lieu amount of $100,000 has thus far been sufficiently high to discourage private developers from paying the fee in most cases.

Irvine, California only allows the fee in lieu to be paid "as of right" for developments of 5 or fewer units or for developments in certain hillside areas. Irvine further requires city approval for all other uses of the fee in lieu or any other alternative compliance measure (e.g. donating land, building off-site) and will only provide approval after the developer demonstrates that all options for construction of units have been exhausted.

There is of course another option for communities that want to ensure that they get hard units *on-site* and that is to not have a fee in lieu option at all. Sacramento, California and New York City do not have fee in lieu options. However, Sacramento and New York City do allow "off-site" construction, so they fall into the category below.

Hard Unit Programs

Many programs don't go quite as far as the "On-Site" programs above. The "Hard Unit" programs do want to make sure they get affordable units from the developer, but they are not as concerned about getting them in every situation on the same site where the market-rate units are being created.

Programs that want to encourage the creation of units (on or off-site) will take the two steps (a and b) listed above for the "On Site" programs and then take one additional step (step C):

c) communities that are less concerned about integrating affordable units in the same development with market-rate units might adopt "in lieu" provisions allowing the construction of the affordable units on another site in the same community or same immediate area (or even in the same jurisdiction) or allowing the developer to rehab or preserve existing units in the same community or same immediate area (or even in the same jurisdiction).

For example, Sacramento, California does not have a payment in lieu of provision. They want to ensure that units are constructed (or that at least land is secured for the construction of units). They do not want money. As a result, the program has succeeded in creating nearly 3,000 units (constructed or planned) since 2000 and has collected $0 in fee in lieu funds.

New York City has adopted a similar posture. For its voluntary inclusionary housing policy, it will allow a developer to receive the cost offsets of: a) 33% density bonus; b) 421a property tax break; and c) access to tax exempt bonds and 4% tax credits, but if the developer does not build 20% affordable housing on-site, then they must build or preserve the same number of units within a one-half mile radius of the site or in the same community district as the site.

Finally, Madison, Wisconsin will only allow the payment of a fee-in-lieu if: a) the cost offsets don't exceed 95% of the revenue differential between the development with and without the affordable housing requirement; and b) off-site construction is not feasible.

Revenue-Raisers

Some programs are primarily meant to serve as revenue-raisers for affordable housing purposes. If this is intended, communities will take the following steps:

a) set the fee at a level that is below the actual cost of creating or subsidizing an affordable unit elsewhere; and
b) allow the fee to be paid "as of right"

Sometimes, programs will become "revenue raisers" without intention – possibly because communities did not take enough care in setting their fee-in-lieu level.

Programs that stand out as revenue raisers include, among others: San Diego's relatively new citywide inclusionary housing policy; Brentwood, California's program; and the City of Chicago's downtown density bonus program.

If a community has a revenue-raising program, it is absolutely essential that the local government have effective mechanisms for spending that money in a timely and efficient and effective manner to address the affordable housing issue in other ways.

San Diego has had an inclusionary housing policy since the early 1990s in its Future Urbanizing Area (FUA). That program does not have a fee in lieu option for developments of 10 or more units – the program produced 1200 affordable units between 1992 and 2003. The citywide program, on the other hand, (which passed in 2003), has only created 138 units from the inclusionary requirement but has collected over $18 million in revenue (with $6.5 million spent and another $21.3 million committed). The fee in lieu payment under the citywide program is a per square footage fee; it is much less than the actual cost differential between an affordable and market-rate unit; and developers may pay this fee as of right. According to the city, the overwhelming majority of the developers under the citywide program pay the fee.

Brentwood, California also has a fee in lieu amount which is "as of right" for developments of 5-9 units. For "for sale" developments of 10 or more units, developer must get city approval to pay the fee and that approval is usually granted. The fee in lieu cannot be paid on rental developments of 10 or more units. Since its creation in 2004, the program has created 78 units (73 on-site and 5 off-site) and has $11-$12 million in committed fee in lieu funds.

In Brentwood, the fee in lieu approximates the "subsidy differential" amount between market-rate and affordable -- $243,536 for units at or below 50% AMI; $182,393 for units at or below 80% AMI; and $70,470 for units at or below 120% of AMI   It appears that the city's willingness to grant approval to pay the fee in lieu has made its program shade towards being a "revenue generator" (although 78 units created within inclusionary developments in 2-3 years for a community of its size is not a bad production figure either).

Finally, the City of Chicago's downtown density bonus program is a clear revenue-generating program. Under this program, developers may choose to access additional FAR above the base zoning in the downtown district, but only if they dedicate 25% of that additional FAR to affordable housing or if they pay a fee in lieu for that additional FAR. The fee in lieu (or "price" for the additional FAR) = [.85 X the cost of land in the area of downtown where the development is located] X Additional Floor Area. This program has generated $25 million in just over two years and has also begun to generate some units (approximately 24). The ability to pay the fee "as of right" and its modest cost for the value of the additional FAR make this a revenue generating program.

Balanced Programs

In balanced programs, the goal is to both raise revenues and create units. To accomplish this end, communities can use a variety of approaches: 1) the fee can only be paid when local approval is granted and such approval will be granted only if a developer meets some local standard (e.g. paying the fee will further the affordable housing policy to a greater extent than building units on site; or hardship; etc.); 2) the fee can only be paid under certain conditions (e.g. in downtown developments); 3) the fee is "as of right" but it is set at a level that is high enough to generate sufficient income, but not so high that it will discourage payment in all situations.

If local approval is required, communities retain great flexibility to get units when they want units and to get fees when they want fees. If a community intends to rely on local approval as the mechanism for operating a "balanced program," the community should take care to craft clear standards for when approval is granted and when it is not.

San Francisco's program provides a good illustration. The fee in lieu payment provision is "as of right" and can be paid on any development in any situation. However, the fee is based on the difference between the development cost of a market-rate unit and the affordable sale price. This amount is then multiplied by **the number of units required for "off site" development (which is higher than the baseline 15% requirement under the ordinance).** This encourages on-site development but also ensures that the city will receive a very large fee in lieu payment when a developer decides to pay. Since 2003, San Francisco has created 1593 units (from inclusionary requirements and units funded by fee in lieu dollars) with another 250-350 units planned for each of the next couple years and has collected $27.4 million from fees.

Boulder has also made its fee in lieu payment provision "as of right" in all circumstances and has also set the fee in lieu level at a rather substantive amount -- $103,000 for attached units and $121,000 for detached units. The program has generated $1.5 million in fees in lieu and 450 units since 2000.

Boston requires approval to pay the fee in lieu amount and the fee in lieu amount is quite high. However, approval is granted at times and the program has succeeded in producing 893 affordable units as well as $13.3 million since 2000. Approval to pay is also required in Chapel Hill and the fee is similarly set at a rather high level – the difference between the market-rate price in the development and an affordable price (although it can be negotiated). However, approval to pay the fee in lieu has been granted on a number of occasions. The program has generated over $1 million in fee in lieu funds since 2000 as well as 288 units.

City approval is also required to pay the fee in lieu in Longmont, Colorado and Stamford, Connecticut. The fee in lieu in Longmont equals the replacement cost of the affordable units, which amounts to a value from $61,562 on the low end (for high density rental) all the way up to $115,692 (for "for sale" detached) on the high end. The program has produced 643 total units from inclusionary construction, another 627 units from the use of fee in lieu payments, and has collected over $4 million in fee in lieu payments. In Stamford, the fee is fairly substantial (ranging from 110% of the Stamford median income all the way up to 240% of the Stamford median income on the high end) – 347 units have been produced with 400 more planned and over $6 million in fees have been collected.

Tallahassee's program attempts to balance their needs for units and funds as well. They allow payment of a fee in lieu as of right and payment is actually quite low ($10,000 to $25,000 per affordable unit). This will generate some revenue for the local housing trust fund – developers should jump at the chance to pay this fee amount instead of building an affordable unit in certain market-rate developments. However, the fee in lieu option is not available for PUDs or RDIs (as mentioned above) and these are likely to capture many of the much larger developments, which should ensure that the program will also produce units. The program is very new so it's hard to predict how the program will play out, but it could create a nice balance of units and funds. Thus far, approximately three hundred affordable units are in the planning pipeline from two developments (one is a PUD and one is a RDI). No fees have been collected as of yet.

Addressing Dilemmas

Regardless of whether a program's goal is to secure hard units on site or off site, to generate revenue, or to strike a balance between revenue and units, many programs often need a fee in lieu provision in order to help address unforeseen or anticipated dilemmas. Fee in lieu provisions can: 1) Provide an alternative means of compliance when challenges arise for onsite development; 2) Fulfill alternative policy goals and secure revenue in situations where money will better serve the community's housing goals; and 3) Address the challenge presented by smaller developments.

First, in many cases, the fee in lieu option provides an alternative means of compliance when market conditions, site constraints, or the unique peculiarities of a development or development type create problems. For example, a program might allow the payment of a fee in lieu where there are overriding environmental concerns or site problems. In Irvine, California, the fee in lieu option is “as or right” for certain “hillside developments” that present site and environmental challenges. Or, the payment of a fee in lieu could be allowed where the development is a luxury high-rise development (with a pool, doorman, etc.) that will require extremely high assessment costs and association payments that will make it difficult for an affordable homebuyer to stay in the building. Or, a fee in lieu might be used in situations where the developer can show that the site is not feasible if affordable housing is included on site.

Montgomery County, MD has long structured its program to secure affordable units within market-rate developments – both to ensure the creation of hard units and to promote and achieve integration of affordable housing with market-rate housing. The program has largely succeeded. However, the county will allow a developer to pay a fee in lieu if the developer applies for this option and the county finds that: a) environmental constraints at the site make the inclusion of the affordable units economically infeasible; or b) “an indivisible package of services and facilities available to all residents” of the proposed development would cost the affordable homebuyers so much that it is likely to make the affordable units unaffordable. In addition, the county must find that the public benefit of the payment of the fee “outweighs the value of locating MPDUs in each subdivision throughout the County” and that accepting the fee will further the causes of the inclusionary program.

Second, the fee in lieu can help secure funds when that better serves the policy goals of the local community. For example, Davis, California wants to see its downtown core redeveloped and they know that some inclusionary requirements could deter this activity in smaller downtown developments. As a result, Davis only allows a fee in lieu payment to be made on developments of 16 units or fewer in the downtown core and they have set the fee relatively low ($37, 000 per affordable unit).

In Boston, Chicago, or other major urban centers, similar considerations could arise with regard to downtown development. The fees gained from a downtown development in such cities may often create more affordable family housing in one of the city's neighborhoods than would have been created on-site in the downtown development. The downtown development will most likely not include family-sized units and the number of affordable units created downtown will be far less than the number that could be created in a city neighborhood (including, in many cases, some of the city's best neighborhoods).

This approach runs counter to inclusionary housing's philosophy of integration. However, in the situation of downtown development in urban centers, it may better serve the city's housing policy to allow at least some of the downtown developments to pay a fee in lieu (either through a discretionary fee where the city allows the developer to pay it in certain situations or through a fee in lieu that is "as of right" for downtown development). Chicago's downtown density bonus provision (which in practice appears to encourage payment over units) accomplishes this end – the fees collected ($25 million committed so far) will be used, in part, to subsidize affordable apartments all across the city for households at or below 30% of the AMI (among other uses). The population below 30% of the AMI is the population most in need in Chicago and this aspect of the inclusionary housing program generates significant revenue to help the city deal with this problem.

Third, the fee in lieu often needs to deal with the problems faced by smaller developments. Some communities require an affordable housing requirement at a very low threshold. Boulder requires it on all developments; Newton requires it on all developments of more than 2 units; Irvine, CA requires it on all developments; Davidson, North Carolina requires it on all developments except conservation easement subdivisions; and Carlsbad requires it on all developments of seven or more units. Plenty more communities require affordable housing in all developments of five or more units. In these kinds of programs, a 10-20% affordability component that gets rounded up can quickly become a 30-50% affordability requirement. The fee in lieu option provides a viable way for these smaller developments to contribute to solving the affordable housing crisis in the community. In Davidson, it is also offered as a way for developments of 8 or fewer units to meet their obligation for units at or below 50% of the AMI.

C. Implications for New Jersey

In the state of New Jersey, local governments have utilized both: a) “fee in lieu” payment provisions and b) development fee provisions. “Fee in lieu” payments have been utilized by New Jersey municipalities on sites zoned for inclusionary development. Instead of requiring the development to include 20% affordable housing, the municipality can allow the developer to pay a fee. Under COAH Rules in Round II, the fee in lieu payment was negotiated between the town and the developer and by rule was intended to be equivalent to the cost of subsidizing the affordable housing that would have been built on the site. Because the fee in lieu payment amount was defined as the amount necessary to subsidize the affordable housing that would have been built on site and because the local municipality historically retained control over *when* and *how much* a developer would pay in terms of a fee, the experience in New Jersey probably falls somewhere between a “balanced approach” and an “on site” approach.

Under more recent COAH rules, the amount of the “fee in lieu” is to be determined through one of three methods, all of which are meant to approximate the cost of creating an affordable housing unit. This approach aims to create a standardized and predictable fee in lieu amount for all development in that area. Whether the developer pays the fee or not remains an issue of local determination.

However, the utilization of “development fees” means that the New Jersey experience also falls into the category of “revenue raisers.” New Jersey municipalities have utilized “development fees” on residential and non-residential developments that are not designated as inclusionary sites (similar to the housing excise tax in Boulder, Colorado or linkage fees in Boston or San Francisco). In *Holmdel Builders Association v. Holmdel Township*, 121 N.J. 550 (1990), the New Jersey Supreme Court ruled that municipalities may impose mandatory development fees on residential and non-residential development, subject to COAH rules, in order to generate additional revenues to address affordable housing needs. The amount of these development fees have historically ranged from one-half of one percent (½ of 1%) to one percent (1%) of the value of the residential development (as measured by the assessed valuation of the property, the coverage amount of the Home Owner Warranty of a "for sale" unit of housing, or the appraised value as listed on the document utilized for the financing of the property if the property is a rental development) if the development has not received a density increase. If the development has received a density increase, then the fee can increase to 6% of the value of the property. These development fees cannot be imposed on a development that includes affordable housing (or on a site where a fee in lieu payment is being collected).

Both fee in lieu payments and development fees are to be deposited into local housing trust funds to be used for affordable housing purposes. Some municipalities have done better than others at spending the funds that they have collected. For example, Lawrence Township (according to the 2002-2003 COAH Annual Report) had collected $5,786,271.81 and had expended $4,955,284.93, demonstrating a fairly effective record of using the funds collected to create affordable housing within Lawrence or in another community as part of a Regional Contribution Agreement. However, other municipalities in New Jersey, not unlike municipalities from across the country, have not been as successful in spending the dollars that they have collected. In part, these dollars represent affordable housing opportunities foregone or affordable housing needs unmet by the local community. As pointed out from the national experience, it is crucial that municipalities develop detailed plans to effectively spend the dollars that they do raise.

D. Fee in Lieu Suggestions

In crafting an appropriate fee in lieu provision, consider the following suggestions drawn from the national experience with fee in lieu provisions:

1) <u>If the goal is to primarily create hard units, calculate the fee in lieu by determining the actual cost of subsidizing a market-rate rate unit down to the affordable level</u>

or by determining the cost of creating/constructing an affordable housing unit in the community. In doing this, err on the side of setting the fee too high, not too low. This will encourage developers to either build the units on site or to build them off-site, if that is an option under the program. If the fee is too high, it can always be re-adjusted to encourage payment in certain situations. If there is a concern that the fee will be too low, do the following:

a) calculate the fee in lieu amount as the difference between the market-rate and affordable price (or some % of this) or as the actual cost of constructing/producing an affordable unit;

b) follow San Francisco's approach and multiply this fee in lieu amount per affordable unit by 1.5 times the number of affordable units required on site (this matches the "off-site" requirement in the San Francisco ordinance); and/or

c) only allow the fee in lieu payment to be made when the payment of a fee will advance the housing goals of the community to the same or greater extent than building affordable units on site (or some other appropriate local standard – e.g. building units on site would cause a hardship or be economically infeasible, building units on site would create environmental damage, etc.).

These three steps will ensure sufficient motivation to build units on site, but will also allow the fee in lieu to be used at the community's option. When the fee in lieu is used, it will generate a significant subsidy that will make a real difference elsewhere in the community. If these steps produce a fee amount that is too high and therefore is never used (e.g. Cambridge) and this outcome fails to meet the local housing goals, then the fee can be re-calibrated.

2) If the program goal is to create hard units in some places and collect fees in others, then consider the following steps for crafting a program that will help to accomplish both goals:

a) calculate the fee in lieu amount as the difference between the market-rate and affordable price or as the actual cost of constructing/producing an affordable unit (or some reasonable percentage of this);

b) consider setting a lower fee in lieu amount for those situations where you wish to encourage payment of the fee (e.g. downtown developments, environmentally sensitive areas, where market rate units are more moderately-priced, etc.);

c) allow the fee-in-lieu to be paid "as of right" in those situations where you would like to collect the fee in lieu or where you anticipate situations where the fee may need to be paid to address dilemmas (e.g. downtown development, small developments, etc.); and/or

d) require local approval to pay the fee and only allow the fee in lieu to be paid in situations where certain standards are met or certain dilemmas arise (when payment of the fee would advance the city's housing goals to an equal or greater extent than building affordable units on site; when building units on site would cause hardship or be economically infeasible; when there are overriding environmental concerns or site concerns; etc.)

3) <u>If the program goal is to collect revenues, take the following steps: a) set the fee at a more reasonable level (something below the cost of producing or subsidizing an affordable unit); but not so low that the program doesn't collect any significant amount of funds and b) allow the fee to be paid "as of right.".</u> San Diego's citywide program and Chicago's downtown density bonus provision appear to strike the right balance here. Newton, Massachusetts 3% fee on the value of market-rate units seems to be one that is too low (town officials are looking at raising its value).

4) Be Prepared to Spend Revenue Effectively. If the goal is to collect revenue, have the mechanisms, expertise, and development community in place to use those revenues effectively and efficiently to create or preserve affordable housing.

Crafting an effective fee-in-lieu policy is an art, not a science. It requires knowledge of the local market, a full understanding of the program's policy goals, and the willingness to track and monitor the program and re-evaluate the fee-in-lieu provision if it is not working to fulfill the programs' goals. Once again, local and state context matters most. Know your goals, know your market, and set your fee in lieu amount and policy based on that.

V. Recommendations and Conclusions

For over 20 years, New Jersey has been a pioneer and an inspiration to states and localities across the country looking for ways to address the affordable housing crisis. The record of production under the state regulatory framework established by the Fair Housing Act and administered by COAH has been nothing short of impressive. State policy and local government action through COAH-approved plans has created tens of thousands of affordable homes, many of them *without any state or federal financing*. By requiring the inclusion of affordable housing within market-rate developments on sites that provide at least a presumptive level of density, local governments and the development community have created desperately-needed affordable homes (many of them in highly desirable locations) that otherwise would not exist. And, under this framework, New Jersey has consistently served populations with lower-incomes than those served by other successful affordable housing efforts in other parts of the country. In compiling this impressive record on affordable housing, New Jersey has embodied the true spirit of Supreme Court Justice Louis Brandeis's call for our states to be "laboratories of democracy."

Of course, no system is perfect. In drafting the Third Round rules, New Jersey must examine how to best improve the state regulatory framework that has helped to create so much affordable housing and that has helped to inspire other state and local efforts across the country. No other state has passed a statewide regulatory framework that is as far-reaching and comprehensive as New Jersey, but hundreds of inclusionary housing programs now exist nationwide (some of them passed prior to the beginning of New Jersey's efforts, most of them passed after) in a diverse array of locations. Many of these programs have been quite successful and now represent a significant portion of the affordable housing production in these communities.

As New Jersey takes steps to "re-tool" its regulatory framework for Round III and to adapt its framework to a changed world and marketplace, New Jersey can draw upon the lessons and experiences with inclusionary housing programs in other parts of the country to inform its own efforts at home. The following five recommendations are drawn from the national experience and are crafted to aid New Jersey in its efforts.

1) **Establish a predictable affordable housing requirement coupled with a required density bonus or a required presumptive density level.** COAH rules should instruct municipalities to: a) establish a clear affordable housing percentage requirement (e.g. 20% affordable housing) and b) to provide a minimum presumptive density bonus of some standardized amount (e.g. 20% density bonus), or in lieu of that, a minimum presumptive density level. Similar to the 40B program in Massachusetts and consistent with the experience of the past two decades in New Jersey, COAH rules should clarify that the percentage of affordable housing required must be a percentage of the total number of units in the development (after accounting for any additional density that is granted to the project). Inclusionary housing programs function best when they have a clear and predictable affordable housing requirement that market actors can take into account when they buy land and choose whether to invest funds in a deal. As the report documented, communities have succeeded with and without cost offsets, but all programs need a predictable and clear affordable housing requirement that market actors can incorporate into their financial decisions.

   Whether or not a program succeeds depends almost entirely on local and state context. However, experiences from a number of locations nationwide, from Massachusetts, and from New Jersey all demonstrate the power and utility of at least a presumptive level of density for stimulating affordable housing development. As a result, it would seem prudent that COAH rules should require all communities that wish to require the inclusion of affordable housing in new developments to provide either a minimum percentage density bonus of some amount or, in lieu of that, at least a "presumptive density level" of some amount. COAH rules should establish the minimum density bonus percentage or the minimum presumptive density level that must be provided by a community. By setting a standardized minimum density bonus or presumptive density level, COAH will help to create predictable and transparent standards that market actors can rely upon when making development decisions and will maximize the chances that the affordable housing requirement will result in much-need affordable housing.

Implicit in the provision of a "density bonus" is the assumption that the density bonus is usable on a particular site. Therefore, it would be prudent for COAH rules to instruct municipalities that provide a density bonus that they must also provide a developer with the flexible zoning standards (e.g. reduced setbacks, increased height, reduced buffering, reduced street widths, reduced parking, etc.) necessary to make the density bonus "usable" on the site in question.

In providing a density bonus, COAH should provide municipalities with some sort of guidance about the amount of density bonus that should be granted -- the greater the affordability requirement, then the greater the bonus that should be provided (unless other cost offsets are being provided in place of a higher density bonus). As stated earlier, examples nationwide vary widely – from programs with no density bonus (e.g. Boston, Boulder, Chapel Hill, Davidson, Longmont, etc.) to programs with very generous bonuses (e.g. Santa Monica where the possibility exists for up to a 50% density bonus). Programs that do include a bonus seem to settle near the level of providing a percentage density bonus that is equal to or slightly higher than the percentage of affordable housing required. For example, in Montgomery County, MD, the affordable requirement is 12.5% to 15% and the bonus is 17-22%, but there is no bonus until the developer includes 12.6% affordable housing. In Denver, for every affordable housing unit above 10% affordable housing, the city grants a bonus of one additional market rate unit for each affordable unit. A percentage-based density bonus that is equal to the percentage of affordable housing required – e.g. a 20% density bonus for 20% affordable housing -- could serve as a good starting point. However, the exact amount of the density bonus should be informed by examining market conditions, costs, and realities in New Jersey.

In providing a clear requirement for affordability and in providing a minimum density bonus or in lieu of that, a minimum presumptive density level, it is important to note that municipalities can accomplish these ends through a number of mechanisms. One, they can pass a citywide inclusionary housing ordinance. Two, they can pass an inclusionary housing ordinance that only applies to certain kinds of development (e.g. development with ten or more units) or only in certain locations (e.g. specific zoning districts). Three, they can choose to follow a "site based" approach (e.g. where individualized sites are identified and affordable housing requirements are imposed for those specific sites). In each of these scenarios, depending on how COAH proceeds with potential requirements for a density bonus or a presumptive density level, each location would need to either: a) provide a density bonus (with any additional zoning flexibility necessary to allow the developer to use the density bonus on that site) that meets or exceeds the COAH-prescribed standard for a minimum density bonus amount, or b) provide an underlying density that meets the COAH-prescribed presumptive density level.

2) **Allow state and federal financing/subsidies to be used for greater and increased affordability.** A number of programs nationwide wisely leverage state and federal housing subsidies in order to create more affordable housing (more units or greater levels of affordability) than is required under their program's baseline requirements. DCA should allow state and federal financing sources to be used in inclusionary developments that contain units to be counted towards a municipality's affordable housing obligation, BUT ONLY if the state and federal financing is used to produce affordable housing units above the baseline requirements for affordable housing (% of affordable housing required and level of affordability). So, for example, if 20% affordable housing is required in a particular development to meet a municipality's COAH obligation, with half of that housing affordable to household at or below 50% of the AMI and half of that housing affordable to households at or below 80% of the AMI, then state or

federal financing sources would only be allowed in the project but only if those subsidies: a) help subsidize the creation of affordable units above and beyond 20% affordable or b) help subsidize those units that serve households at or below a lower income level, such as 30% of the AMI.

3) **Link more generous cost offsets to greater and increased affordability.** Many programs nationwide wisely leverage their own local "cost offsets" in an attempt to generate more affordable housing than is otherwise required under their baseline requirements. COAH rules and municipal regulations should similarly encourage developers to create more affordable housing than is required and to create housing that is affordable to lower income levels than required under COAH rules. For creating more affordable housing than required or for creating housing that exceeds COAH's affordability regulations, municipalities should be required to provide developers with additional cost offsets beyond a presumptive density level or beyond the minimum density bonus amount. And COAH should consider additional ways to provide municipalities with "additional credit" towards meeting their fair share obligations if they produce housing that is affordable to households at or below 30% of the AMI.

4) **Fee in Lieu Amounts, at a minimum, should equal the cost to construct an affordable housing unit or the cost to subsidize a market-rate unit so that it can sell or rent at an affordable price.** Municipalities should adopt a fee in lieu amount that a) approximates the subsidy necessary to "write down" the cost of a market-rate unit to an affordable level (subsidy differential approach) or b) approximates the cost of constructing/producing an affordable unit. As detailed above in this report, this can be accomplished by requiring the fee per unit to equal a) the difference between a determined market-rate price and a determined affordable price or b) the cost to actually construct or produce an affordable unit by adding together land costs, soft costs, and hard costs of construction for an affordable unit in the community or region. The first amount estimates what will be needed in order to "write down" the price of a market-rate unit to an affordable

level on another development; the second method estimates the amount needed to construct an affordable unit from “scratch”. Both serve the purpose of estimating the funds needed to create an affordable unit elsewhere in the community.

In setting the actual fee in lieu amount per affordable unit, municipalities have a few options. Under either method, one can establish a flat “fee in lieu payment” amount for all developments in the municipality; one can establish a tiered “fee in lieu payment” amount that is tied to the level of affordability required for that unit (e.g. a fee amount for units at or below 80% of the AMI; a fee amount for units at or below 50% of the AMI, etc.); and, also under a subsidy differential approach, one can also establish a “fee in lieu payment” per affordable unit on a development by development basis (using the specific market-rate and affordable prices from that development).

Going the route of a fee in lieu amount that is standardized for all developments (either as a flat or tiered amount as described in the first two options in the previous sentence) provides greater market predictability and represents less of an administrative burden at the local level. Going the route of a development-specific or tiered “fee in lieu” amount arguably ensures a more “accurate” fee in lieu amount and arguably treats developments more equitably in one sense – higher-end developments pay more and developments with more moderately priced market-rate units pay less. Most programs nationwide use some form of a standardized approach, often with a provision that generates a higher fee in lieu amount per unit for the more affordable units (e.g. $100,000 per affordable unit at 80% of the AMI; $125,000 per affordable unit at 50% of the AMI).

It is recommended that COAH adopt a standardized fee in lieu amount for each of the COAH regions.

5) **Utilize fee in lieu provisions to address policy goals and dilemmas. Allow individual municipalities the ability under COAH rules to establish some local criteria for the payment of the fee in lieu in order to address local policy issues.** Municipalities should attempt to secure the inclusion of affordable units within market-rate developments whenever possible. However, this will not always be possible or desirable. Fee in Lieu amounts should be as clear and as predictable as possible. As much as possible, developers should be able to calculate the fee in lieu amount that would be owed before choosing to proceed with a development.

   But, COAH should consider allowing local municipalities the option to set policy as to when a fee in lieu provision will be used in order to address the unique policy and market considerations of each town or region. Is there a portion of town that is struggling to revitalize? Are there environmentally-sensitive parts of town or areas that are "difficult to develop" because of topographical challenges? Are there special housing needs (e.g. rental housing for the disabled or homeless or working poor) that could be well served by an infusion of cash instead of by the creation of affordable units? These are the kinds of questions that each town should ask itself in crafting policy as to when the municipality will allow a fee to be paid "in lieu of" building affordable housing on-site. These are the kinds of permutations that COAH should consider allowing under its rules.

"All politics is local," Tip O'Neill once famously counseled. When it comes to inclusionary housing programs, maybe the most important lesson is "all success is local." Local markets, local politics, the presence or absence of a statewide regulatory framework, and local policy goals matter most and play the biggest roles in determining the level of success in any program. Therefore, COAH must determine what will work best in New Jersey based upon state and local factors that are specific to New Jersey. Hopefully, the lessons and recommendations embodied in this report will be a useful guide to that end.

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[ii] Non-Profit Housing Association of Northern California (NPH). 2007. *Affordable by Choice: Trends in California Inclusionary Housing Programs*. San Francisco, CA: NPH, Executive Summary.
[iii] Radhika K. Fox and Kalima Rose. 2003. *Expanding Housing Opportunity in Washington, D.C.: The Case for Inclusionary Zoning.* A PolicyLink Report. Oakland, CA: Policy Link, p. 15.
[iv] Contact the Innovative Housing Institute for more information on DC metro area programs. See www.inhousing.org
[v] Richard Tustian. 2000. "Inclusionary Zoning and Affordable Housing," in *Inclusionary Zoning: A Viable Solution to the Affordable Housing Crisis?* New Century Housing, Vol. 1, Issue 2. Washington, D.C.: The Center for Housing Policy, p. 23.
[vi] Citizens' Housing and Planning Association (CHAPA). January 2006. *Fact Sheet on Chapter 40B: The State's Affordable Housing Zoning Law*. Boston, MA: CHAPA. Available on the Web at: http://www.chapa.org/40b_fact.html. Accessed: 8-19-07.
[vii] Clark Ziegler. 2002. "Introduction," in *Inclusionary Housing: Lessons Learned in Massachusetts*. National Housing Conference (NHC) Affordable Housing Policy Review. Vol. 2, Issue1. Washington, D.C.: National Housing Conference, p.1.
[viii] Contact the Citizens Housing and Planning Association (CHAPA) for more information on Chapter 40B and inclusionary housing efforts in Massachusetts. www.chaap.org
[ix] See, for example: Alan Mallach. 1984. *Inclusionary Housing Programs: Policies and Practices:* New Brunswick, NJ: Center for Urban Policy Research – Rutgers University.; Karen Destorel Brown. 2001. *Expanding Affordable Housing Through Inclusionary Zoning: Lessons from the Washington Metropolitan Area.* Washington, D.C.: Brookings Institution, Center on Urban and Metropolitan Policy, p. 13.; Dr. Robert W. Burchell and Catherine C. Galley. 2000. "Inclusionary Zoning: Pros and Cons," in *Inclusionary Zoning: A Viable Solution to the Affordable Housing Crisis?* New Century Housing, Vol. 1, Issue 2. Washington, D.C.: The Center for Housing Policy, p.7; Nico Calavita and Kenneth Grimes. 1998. "Inclusionary Housing in California: The Experience of Two Decades," *Journal of the American Planning Association.* Vol. 64, No. 2, Spring. Chicago, IL: American Planning Association (APA), pp. 150-170.; Arthur O'Sullivan. 1996. *Urban Economics.* 3rd. Ed. Chicago, IL: Irwin Publishers, p. 294.; David Paul Rosen and Associates. 2002. *City of Los Angeles Inclusionary Housing Study: Final Report.* Los Angeles, CA: Prepared by David Paul Rosen and Associates for the Los Angeles Housing Department.; Nico Calavita, Kenneth Grimes, and Alan Mallach. 1997. "Inclusionary Housing in California and New Jersey: A Comparative Analysis." *Housing Policy Debate*. Vol. 8, Issue 1. Washington, D.C.: Fannie Mae Foundation. P. 122.; Marc Brown and Ann Harrington. 1991. "The Case for Inclusionary Zoning, " *Land Use Forum* 1(1): 23-24.; San Diego Housing Commission. 1992. *Inclusionary Housing Analysis: Balancing Affordability and Regulatory Reform.* Report to the Deputy City Manager. San Diego, California.; Center for Housing Policy. 2000. *Inclusionary Zoning: A Viable Solution to the Affordable Housing Crisis?* New Century Housing, Vol. 1, Issue 2. Washington, D.C.: Center for Housing Policy.; CCRH and NPH, *Inclusionary Housing in California,* p. 20.; Fox and Rose. 2003. *Expanding Housing Opportunity in Washington, D.C.*, p. 13.
[x] NPH, *Affordable By Choice,* Executive Summary.
[xi] Brown. *Expanding Affordable Housing Through Inclusionary Zoning*, p. 14.; Joyce Siegel. 1999. *The House Next Door*. The Innovative Housing Institute. Available Online: http//www.inhousing.org.
[xii] NPH, *Affordable By Choice*, p. 33.
[xiii] Bonnie Heudorfer for the Citizens' Housing and Planning Association (CHAPA). March 2007.*Update on 40B Housing Production.* Boston, MA: CHAPA.
[xiv] Ibid.
[xv] Ibid.
[xvi] Ibid. All of the data in this paragraph comes from the *Update on 40B Housing Production* report.
[xvii] New Jersey Council on Affordable Housing (COAH). 2003. *Annual Report 2002-2003.* Trenton, NJ: COAH.
[xviii] Ibid.
[xix] Ibid.

[xx] New Jersey Council on Affordable Housing (COAH). 2003. *Annual Report 2002-2003*. Trenton, NJ: COAH.
[xxi] CCRH and NPH. *Inclusionary Housing in California*.
[xxii] NPH, *Affordable by Choice*, Executive Summary.

Exhibit A
Examples of Municipalities with Inclusionary Housing Programs

(Information is current as of July 2007 unless otherwise noted)

	Affordable Units Produced	Threshold Number Of Units and Income Target	Affordable Housing (Required Percentage)	In lieu Fee Payment/ Off-site Development	Density Bonus	Other Developer Incentives
Boston, Massachusetts (2000)	893 inclusionary units 493 For Sale 400 Rental 8,349 Market Rate ($13.3 million collected from fee in-lieu payments as of July '07)	Threshold: 10 or more units Income Target: 100% To 160% of **Boston Median Income (BMI)** For Sale (130% -160% of **BMI)** Rental (100 to 120% of **BMI)**	15%	Fee in lieu of payment permitted, but must be approved by City Rental Units: $200,000 Per Affordable Unit For Sale Units: Greater of $200,000 or 50% of the Difference between the Purchase Price of the Market Rate Units and the Price of the Affordable Units Off-site Development Can be Approved by City	None	None May Not Use Additional Local, State, or Federal Dollars to Meet the IZ Requirement
Brentwood, California (2004)	Approximately 78 Units (36 For Sale; 37 Rental; and 5 Off-Site); Assessed $11 million to $12 million in fee in lieu payments ($5 million currently in city's affordable housing fund)	Threshold: 5 or more units Income Targets: 50% to 120% of AMI **For Sale Projects**: 50-120% AMI 3% at 120% of AMI; 4% at 80% of AMI; 3% at 50% of AMI **Rental Projects**: 50-80% AMI 5% at 80% of AMI; 5% at 50% at AMI	10%	Difference between the affordable price and the cost of building a market-rate unit (updated annually) For developments of 5-9 units, fee-in-lieu is as of right ($182,393) For rental developments of 10 or more units, fee-in-lieu is not allowed For for sale developments of 10 or more units, developer must obtain city approval, which is most often granted. Fee in lieu is based on the affordable unit required-- For units serving 50% or below AMI -- $243,536 For units serving 80% or below AMI -- $182,393 For units serving 120% or below AMI -- $70,470 Dedication of land or units (existing or to be constructed off-site) can be allowed by city	9% local bonus above the midpoint of the density range established by the zoning code (local bonus -- not often granted); Up to 35% by state law**	Processing fee and impact fee deferrals, flexible design standards (e.g. reduced lot sizes and setback requirements, landscaping requirements, interior amenities, parking requirements, ability to mix housing types, etc.), expedited permitting, direct financial assistance (however, town grants few incentives in practice – especially reluctant to grant density bonuses or parking reductions)
Brookline, Massachusetts (1987, revised 1997 and 2002)	Approximately 70 Units $5.6 million in fee-in-lieu collected and spent	Threshold: 6 or more units (any development that needs a special permit) Income Target: 100% of AMI (2/3 at 80% AMI)	15%	For 15 or fewer units, developers may choose to pay the fee in lieu, which is called a "Trust Payment," which is actually a payment on each market-rate unit Ownership Units – (Sales Price - $125,000) X Contribution Factor (3% for 6 units; 3.75% for 7 units; 4.5% for 8 units, etc.) Rental Units – [Market Value of the Development – (number of units X $125,000)] X Contribution Factor Additional Trust Payment for conversion of rental units to condos	None	1) Parking Reduction – 1 space per affordable units instead of 2 or more 2) Different Materials Allowed for Affordable
Boulder, Colorado (2000) – Passage of Mandatory Ordinance	450 units (about 65 units per year) $1.5 million plus in fee in lieu fund collected 1,881 permits issued in that time	Threshold: All residential development, except for a single detached dwelling unit with a total floor area of less than 1600 square feet Income Target: 57-77% AMI Rental: 57% of AMI (can go up to 67% of AMI); For Sale: 67% of AMI (can go up to 77% of AMI)	20% (voluntary for rental; mandatory for ownership)	As of right, developments of 4 or fewer units may provide one unit on-site, one unit off-site, dedicate land for one unit, or make the fee-in-lieu contribution Ownership Developments (Over 4 units) must provide ½ of the units on site – can be allowed to develop the ½ off-site. Rental Developments (over 4 units) can be allowed to dedicate land that is equivalent in value to the fee-in-lieu contribution plus an additional 50% to cover transaction costs or provide land that would allow the development of the required number of affordable units, or dedicate existing rental units Payment in Lieu is always "as of right" for any developer who chooses that method of compliance Attached Units: $103,000 Detached Unit: $121,000	None	Housing Excise Tax Waived for Permanently Affordable Units Waiver of Development Excise Tax if you make more than 20% affordable; Exemption from Residential Growth Management System (RGMS) if more than 35% affordable
Cambridge, Massachusetts (1999)	450 units currently under deed restriction with many more on the way 3,860 Market Rate Units	Threshold: 10 or more units Income Target: 65-80%AMI Rental and Ownership	15%	Fee = Difference in Price of Market-Rate Unit and Affordable Housing Unit Fee in-lieu theoretically allowed if developer demonstrates a "significant hardship." The process is intentionally arduous and independent approval would have to be granted by the Affordable Housing Trust and the Planning Board, which have never done so.	30% Increase in FAR 1/2 of FAR Increase Allocated to Market Rate 1/2 of FAR Increase Allocated to Affordable	Increased FAR, decreased min. lot area requirement, no variances needed for affordable units

Examples of Municipalities with Inclusionary Housing Programs

(Information is current as of July 2007 unless otherwise noted)

	Affordable Units Produced	Threshold Number Of Units and Income Target	Affordable Housing (Required Percentage)	In lieu Fee Payment/ Off-site Development	Density Bonus	Other Developer Incentives
Carlsbad, California 1993	1,600 affordable units (1,300 rentals; 300 for sale) 10,000-12,000 market-rate units	Threshold: 7 or more units Income Target: 70% of AMI (Rental) 80% of AMI (Ownership)	15%	Fee in lieu only available to Developments of 6 or fewer units $4,515 per unit Fee = 15% of the subsidy required to make one, newly constructed attached housing unit affordable to a household at 80% of the AMI If building on-site is infeasible or creates unreasonable hardship, town may also allow developer to: a) pay fee in lieu; b) build a higher % of affordable housing off-site, c) rehab existing units, d) construct a shelter or other special needs housing in lieu of building on-site, or e) purchase affordable housing credits from the city.	Developer may apply-only granted on a case by case basis. Up to 35% bonus by state law	None
Chapel Hill, North Carolina* (2000)	288 units constructed or approved $1,132,000 collected or committed since 2000	Threshold: 5 or more units Income Target: 60-80% AMI (usually 70% AMI)	15% affordable	In-lieu fee allowed with the approval of the Town Council. The fee is equal to the cost of making homeownership possible for a targeted family multiplied by the number of affordable units owed.	None	None
Chicago, Illinois (2003 – Passage of Initial Affordable Requirements Ordinance (ARO), amended 2007; 2002 – Creation of CPAN Program 2004 – Creation of Downtown Density Bonus Program)	Over 1,000 affordable units and over $25 million in fee in lieu commitments since 2002	Threshold: CPAN: 10 or more units (based on negotiation between the developer and local alderman) ARO: 10 or more units (on all developments that receive cash assistance from the city, city land, an increase in zoning density, a zoning change from non-residential to residential, or that utilize the planned unit development process) Downtown Density Bonus: N/A Income Targets: 60% of AMI (rental) 100% of AMI (for sale)	10% (20% for developments receiving "city assistance" such as Tax Increment Financing subsidies)	In lieu fee is: ARO: $100,000 per affordable unit; CPAN: negotiated amount; any off-site option is negotiated Downtown Density Bonus Program: median cost of land in that area of downtown X [.80 X Additional floor area granted] There are no formal off-site development provisions	ARO: only that which is provided implicitly (e.g. zoning changes, PUDs, etc.) CPAN: only if negotiated Downtown Density Bonus: Yes (depends on the kind of development – based on a schedule in the zoning code)	Under CPAN, can receive fee waivers, landscaping assistance, marketing assistance, cash subsidy, purchase price assistance to the buyer, and possibly a density increase if negotiated ARO: None Downtown Bonus: None
Davidson, North Carolina (2001)	265 units constructed and approved $500,000 in fee in lieu funds collected or committed	Threshold: 8 or more units must build on site (less than 8 units can either pay in-lieu fee or build on site) Income Target: 50-150%AMI A minimum of 30% of the affordable units must be targeted to 50% of AMI or below; As much as 30% of the affordable units may be targeted to 50-80% of AMI; As much as 20% of the affordable units may be targeted to 80-120% of the AMI; As much as 20% of the affordable units may be targeted to 120-150% of the AMI.	12.5% for all new developments except conservation easement subdivisions	Ordinance does not provide for off-site construction or in-lieu fee payment for projects of 8 or more units; Ordinance gives projects of less than 8 units the option to pay an in-lieu fee. Fee in Lieu = (Median price per square foot of market-rate housing – median price per square foot of affordable housing) X Median square footage for an affordable unit. Fee in lieu may be paid by developers "as of right": a) in developments with 8 or fewer units; or b) to satisfy their obligation to construct units affordable to households at or below 50% of the AMI	Affordable units don't count toward the density of the site	None

*Chapel Hill, North Carolina does NOT have a mandatory Inclusionary Zoning Ordinance. Instead, they have a voluntary ordinance that is heavily encouraged. Most Developments comply -- %s are often negotiated (higher or lower than 15%).

Examples of Municipalities with Inclusionary Housing Programs

(Information is current as of July 2007 unless otherwise noted)

	Affordable Units Produced	Threshold Number Of Units and Income Target	Affordable Housing (Required Percentage	In lieu Fee Payment/ Off-site Development	Density Bonus	Other Developer Incentives
Davis, California (1990)	1,800 affordable units $220,000 in fees in lieu collected since 1999 ($70,000 to $100,000 collected in 2007 --$66,000 spent already)	Threshold: All Residential Development of 5 or more units Income Target: 50-120% AMI Rental (5 to 20 units) – 15% at 80% AMI, 10% at 50% AMI Rental (20 or more) – 25% at 80% AMI, 10% at 50% AMI For Sale (5 or more units) – 80%- to 120% of AMI (avg. at 100% AMI); Land Dedication – 65-80% of AMI	25% (5 to 20 units – rental or for sale; over 20 units for sale) 35% (more than 20 units rental) *these percentages include the density bonus granted to the developer	Fee in Lieu = $37,000 per affordable unit (for 2007-08) (1/2 of the subsidy needed to build affordable housing on donated land) Only used in limited situations – developments in the downtown core with fewer than 16 units and fewer than 39 bedrooms All rental developments must construct their affordable units on-site (no in lieu provisions) Ownership developments of 5-75 units, 100% of units must be on-site (unless qualify for limited fee-in-lieu payment) Ownership developments of 76-200 units, developer must offer a land dedication to develop affordable units for households earning 65-80% of AMI off-site (assuming a density of 15 units per acre) Ownership developments of 200 plus units, 12.5% on site (80-120% of AMI) and 12.5% by land dedication (65-80% of AMI)	One for One for On-Site Affordable Units and for land dedications (% affordable housing requirement calculation includes the bonus units) Up to 35% bonus by state law	Relaxed zoning requirements, reduced parking and setbacks, expedited permitting (but all are discretionary and tailored to each project, if granted at all)
Denver, Colorado (2002)	Approximately 1000 units produced and planned	Threshold: 30 or more units in for-sale developments; rental set-aside is voluntary Income Target: For-sale at 80% to 95% AMI; rental at 65% AMI or below	10%	Off-site development allowed. A fee in-lieu of 50% of the price per affordable unit is permissible	10% (but only if you set aside more than 10% affordable housing)	Cash subsidy, reduced parking requirements, expedited review process
Fairfax County, Virginia (1991)	Over 1200 produced; over 600 in the pipeline	Threshold: 50 or more units Income Target: 70% AMI or below	5-12.5% SF-up to 12.5% MF-6.25-12.5% MF w/Elevator-5-6.25%	Fee in lieu = FMV of the affordable unit. Fee in-lieu allowed in "exceptional cases" where developer shows on-site to be physically impossible or financially infeasible to build.	Sliding Scale of 10-20%	Parking Reduction in some cases for multi-family buildings
Highland Park, Illinois (2003)	16 units approved $240,000 in fee in-lieu money	Threshold: 5 or more units Income Target: 50%-120% AMI for for-sale units, at least 50% must be sold to 80%AMI. On average, the set-aside units must target 65% of the AMI; remaining units target, on average, 100% of the AMI. Rental units: no less than 33% target between zero and 50% of the AMI, no less than 33% of the units target between 51% and 80% of the AMI, and 33% target 81% and 120% of the AMI	20%	In-lieu fee determined by the City Council and deposited in the Affordable Housing Trust Fund; $100,000 per unit currently Developments of 19 or fewer detached, single-family homes may pay fee in lieu "as of right" Developer may also construct units off-site or donate land with city approval	One additional market-rate unit for each affordable unit built; PUDs can receive up to 1.5 times the number of market-rate units for each affordable unit	Fee waivers (ex. impact, demolition, utility connection fees) Demolition Tax Waiver
Irvine, California (adopted mandatory ordinance in 2003 but has had voluntary inclusionary policies since 1978)	Since 2003 update, 769 built (752 rental units and 17 ownership units) 152 under construction ($5.1 million of $12.5 million in fee in-lieu money collected) In 2006--2,172 total units built 144 were affordable 150 affordable were under construction & to be completed in 2007	Threshold: All developments, any size Income Target: 50-120% CMI 5% at 50% of the County Median Income; 5% at 51-80% CMI; and 5% at to 80-120% CMI	Mandatory; 15% of all units	$12,471 per unit of affordable housing required As of Right for Developments of 5 or fewer units and developments in certain hillside areas. Fee in-lieu payments and other alternatives to on-site units permissible if developer demonstrates having exhausted all options for construction of units. Fee formula based on average land value.	Up to 35% by state law**	Reduced Parking Requirements Reduced Fees Reduced Park Land Set Aside Expedited Permit Process

Examples of Municipalities with Inclusionary Housing Programs

(Information is current as of July 2007 unless otherwise noted)

	Affordable Units Produced and Fee in-lieu Collected	Threshold Number Of Units and Income Target	Affordable Housing (Required Percentage)	In lieu Fee Payment/ Off-site Development	Density Bonus	Other Developer Incentives
Longmont, Colorado (1995, amended '01)	643 affordable units (188 ownership 455 rental) 4,862 total units in that time $4,002,126 collected ($902,640 committed) 627 additional affordable units from fees	Threshold: No threshold in annexation areas 5 or more units everywhere else Income Target: 50-80% AMI 80% AMI (For Sale) 50% AMI (Rental)	10% of all units in annexation areas and citywide	Fee in Lieu = Cost to Construct Affordable Unit (Hard Costs + Soft Costs + Land) $115,692 (for sale detached) $75,528 (for sale attached) $61,562 (high density rental) $75,604 (low density rental) Must receive permission to pay fee in lieu, build off-site, dedicate existing units, or partner with non-profit to fulfill requirement Fee in Lieu used for high-end deals	None for 10% Set Aside Only Possible on 12-15% Set Aside at Lower Income Levels	Development Fee Reduction Program (for 10% Set Aside) – 20-50% Reduction Affordable Housing Incentive Program (only for 12-20% Set Aside at Specific Income Levels) – eligible for expedited review, density bonus, zoning and design flexibility, additional fee waivers, marketing assistance
Madison, Wisconsin (2004.Amended 2006)	300 units (2004-05) out of 2000 total dwelling units; collected $900,000 in fee in lieu payments)	Threshold: 10 or more units Income Target: 80% of AMI or less (for sale) (rental is voluntary due to WI Supreme Court decisions regarding rent control)	15%	Not allowed often, only if : 1) cost offsets don't cover 95% of the revenue differential between a non-inclusionary development and an inclusionary development; and 2) off-site construction is not feasible. Fee in Lieu Amount = 10% of the average sale price of the owner-occupied units in the development X each affordable unit that will not be provided	Yes (varies with different zoning districts) – Developer requests offsets from a menu and may request offsets equal to the revenue differential between the development without any inclusionary requirement and one with an inclusionary requirement; the Director of the Planning reviews these requests	Developer requests offsets from a menu (see density bonus) Reduced park development fees, reduced park dedication requirements, parking reductions, cash subsidies of up to $2,500 to $5,000 per affordable unit (depending on the kind of affordable unit and the type of development), additional FAR, additional floor or story in the downtown district, ability to mix housing types, expedited review, residential development in commercial and industrial zones, reduced street widths, use of state and federal subsidies if you agree to increase % or amount of affordability.
Montgomery County, Maryland (1974)	Over 12,000 units	Threshold: 20 units or more Income Target: 65% AMI or below	12.5-15% of all units Of these, PHA may purchase 40%, and qualified not-for-profits may purchase 7%	Fee in Lieu = 125% of imputed lost of land to donate land May request approval to make fee in-lieu payment or build affordable units off-site in contiguous planning area if developer demonstrates environmental constraints, other factors related to infeasibility, and benefits of alternative compliance.	Up to 22%	Waiver of water, sewer charge and impact fees. Offer 10% compatibility allowance and other incentives. May apply for additional density bonuses.
Newton, Massachusetts (1977, Revised 2003))	502 units $2.2 million collected in fee in-lieu payments	Threshold: All developments more than two units Income Target: 3 or Fewer Units-80% AMI 3 or More Units -2/3 80% AMI --1/3 50%AMI	15% Now	If a development is below 10 units, a developer can make a fee in-lieu payment, at 3% of the market value of each market rate unit in the development.	None	None
New York City, New York (2005)	Approximately 200 Rental Units Constructed; Over 7,000 affordable units anticipated over the next decade	Threshold: N/A Applies to Large, targeted rezonings in areas of the city where upzonings are occurring Income Target: 80% AMI – in some places, it is 80% AMI with an option to do 10% at 80% AMI and 15% at 120% AMI	20% (Voluntary) – in some places, there's an option to do 25% with 15% at the 120% AMI level	None Off-Site Construction Option or Preservation Option within one-half mile radius of site or in the same community district (as of right)	33% Density Bonus in FAR (As of right and above the base zoning level that the area has been upzoned to)	Property Tax Break Under Reformed 421-A program -- 20-25yr property tax exemption Tax Exemption Bonds and 4% Tax Credits If Bonds and Tax Credits are used, affordability levels drop to below 60% and 50% AMI

Examples of Municipalities with Inclusionary Housing Programs

(Information is current as of July 2007 unless otherwise noted)

	Affordable Units Produced	Threshold Number Of Units and Income Target	Affordable Housing (Required Percentage)	In lieu Fee Payment/ Off-site Development	Density Bonus	Other Developer Incentives
Pleasanton, California (adopted mandatory ordinance in 2002 but has had voluntary inclusionary policies since the late 1970s)	635 units produced and planned ($14.85 million collected in fee in-lieu payments)	Threshold: 15 or more units, but projects under 15 units must pay an in-lieu fee Income Target: Very-low-, low-, and moderate-income households (based on HUD definition)	For new multiple-family residential projects, 15% for very-low-and/or low-income households; For new single-family projects, 20% for very- low-, low-, and/or moderate-income households (based on HUD definitions)	Developers can opt to construct affordable units off-site, make a land dedication, or pay an in-lieu fee. Fee calculated based on gap between affordable price and market price of housing, and is now $9,000 per unit of affordable housing required.	Up to 35% by state law**	Fee waiver or deferral, design modifications, priority processing
Sacramento, California (2000)	2,999 units planned or constructed	Threshold: Developments with more than 9 units Income Target: 50-80% AMI one-third of the units priced between 50 and 80% AMI; the remaining two-thirds of the units priced at 50% AMI.	15% 10% at 50% AMI 5% at 50-80% AMI.	No Fee in Lieu Solely SF Developments can do 100% of units at 80% AMI Condos of 200 or more units can ask for 10% at 50-80% AMI	Up to 35% by state law**	Expedited permit process, fee waivers, relaxed design standards.
San Diego, California (1992, expanded in 2003)	1,200 in FUA between 1992-2003 138 Units constructed since 2003 under citywide program; 5,000 Market Rate Units built since 2003 ($18 million collected in fee in-lieu payments, an additional $21.3 million committed) $6.5 Million spent	Threshold: 10 or more units Income Target: At or below 65% AMI (Rental) At or below 100% AMI (For Sale)	10%	[.50 (Median price of market-rate unit – price that a household of four at median income can afford)] and then product of this is divided by 10 (set aside amount) and then that amount is divided by 2,000 square feet (average size of unit) Fee in lieu is as of right and 98% of developers pay the fee.	Up to 35% by state law**	None in FUA FUA – no offsets Citywide program – expedited permitting, reduced water and sewer fees, possibility of reduced parking, setbacks, increased height, etc. on a case by case basis, and federal, state, and local subsidies but only if additional or deeper affordability is provided.
San Francisco, California+ (2003, amended 2006)	1,593 units since 2003 (from fee in lieu funds and inclusionary units); 250-350 affordable units planned per year for the next few years from inclusionary developments; $67 million in fees collected between 2003 and 2007	Threshold: 5 or more units Income Target: 60-120% of San Francisco Median Income (SFMI) 60% SFMI (Rental) 80% SFMI for off-site "for sale" 80-120% SFMI (For Sale on site - w/ average at 100% AMI)	15% (only 12% if building taller than 120 feet) 15% or replacement of 100% of demolished or converted affordable housing, whichever is greater in projects where existing affordable housing is demolished or converted	Developers can elect to build affordable units off-site, but the affordable housing requirement increases to 20% for off-site units (only increases to 17% for buildings taller than 120 feet) and must be affordable at 80% AMI; Fee = Difference between total development cost of a market rate unit and the affordable sales price X the amount of housing that would need to be developed off-site Studio = $187,308 per unit 1 BR = $256,207 per unit 2BR = $343,256 per unit 3BR = $384,562 per unit As of right and updated annually Affordable Housing Fee for Commercial Development (Jobs-Housing Linkage Fee): Net Additional Gross Square Footage X Base Fee Amount for Different Industries = Total Fee (Entertainment = $13.95; Hotel = $11.21; Office Space = $14.96; R&D = $9.97; Retail = $13.95.)	Up to 35%** (Rarely Granted)	Refunds available on the environmental review, building permit fees and conditional use fees that apply to the affordable units

Examples of Municipalities with Inclusionary Housing Programs

(Information is current as of July 2007 unless otherwise noted)

	Affordable Units Produced and Fee in-lieu Collected	Threshold Number Of Units and Income Target	Affordable Housing (Required Percentage)	In lieu Fee Payment/ Off-site Development	Density Bonus	Other Developer Incentives
Santa Fe, New Mexico (1998)	Approx 500-600 units produced and planned (183 home ownerships units created in 2005; 200-300 rental units are in the pipeline for the next 2-3 yrs.)	Threshold: All developments are covered Income Target: 80% to 120% AMI	30% for sale; 15% rental	Only permitted in case of economic hardship and when required affordable percentages create a fraction of a unit. Fee based on square footage and cost to build units.	Bonus of 15% over what the parcel is currently zoned	Waiver of building fees; Also, impact fees may be waived only for affordable units
Santa Monica, California (1998)	769 affordable; 2,089 market rate units during that time $619,126 in affordable housing fees collected in FY 05/06 alone	Threshold: 2 or more units Income Target: 50-100%AMI Rental – 10% at or below 50% AM; 10% at or below 80% AMI For Sale – 4-15 Units – 20% at 100% of the AMI (or can do rental housing for the 20% at 60% AMI) 16 Units or More – 25% at 100% of the AMI	25% Affordable (for sale, 4-15 units) 20% Affordable (for sale, 16 or more units) 20% Affordable (rental)	Fee in Lieu = “Affordable Housing Base Fee” (“AHBF”) X Floor Area “Affordable Housing Base Fee” -- $28.15/sq. foot for ownership; $24.10/sq. foot for rental “As of Right” for: a) 2-4 Units and b) residential developments in commercial or industrial districts Vacant Parcels = [AHBF X Floor Area] X .75 Residential Developments in Commercial or Industrial Areas = [AHBF X Floor Area of Project Dedicated to Residential Use] X .50 Off-site construction option or land dedication, if granted, must be within .25 mile radius of the market-rate units. Off-site option requires 25% more affordable housing in some cases	Up to 35% by state law**	Height Bonus (10% in non-residential districts; more limited in residential) Increase in FAR by .5 times the FAR dedicated to affordable housing in non-residential districts Increase in FAR by 25% in residential districts (total bonus from state and local bonuses cannot exceed 50%) Flexible Zoning/Development Standards – reduced parking, variances/reductions to side year, front, or rear setbacks or parcel coverage requirements, greater allowable floor area or floor area discounts in some districts
Stamford, Connecticut (2002)	347 Affordable Units Constructed; 400 More Planned; Over $6 million in fee in lieu funds collected; Over 2,600 total units developed since 2002	Threshold: Multi-family Housing generally determined by Specific Zoning Districts Income Target: 30-60% AMI	10% - 12% (increases with density bonuses granted)	Fee in lieu = %s of the median income in Stamford depending on the kind of affordable unit that the fee-in-lieu applies to 25% of AMI – fee in lieu can be up to 240% of the median income in Stamford 50% of AMI – up to 145% of the median income in Stamford 60% of AMI – up to 110% of the median income in Stamford Must apply for city approval to use the fee-in-lieu No other off-site options	Yes – depends on the zoning district/portion of bonus units must be affordable	Height, setback, and lot size requirements may be altered in specific situations to accommodate the density bonus
Tallahassee, Florida (2005)	Approx. 300 Affordable Units Planned	Threshold: 50 or more units (in Planned Developments, in Developments of Regional Impact (DRIs) and in census tracts where the median income is higher than the citywide median income) Income Targets: 70% AMI for affordable ownership or in certain districts, option to do 100% AMI for workforce rental housing (based off high HOME rents)	10% Affordable Ownership or in certain districts, option to do 15% Workforce Rental	$10,000 to $25,000 (depending on the price of the market rate units) 110% of Affordable Sales Price = $10,000 Fee Per Required Unit 110-175% = $15,000 Fee Per Unit 175-225% = $20,000 Fee Per Unit 225% or Greater = $25,000 Fee Per Unit	25% (affordable % requirement not counted among bonus units)	Expedited review, design flexibility (mixing housing types, reduced buffering and screening, reduced setbacks and lot sizes), transportation currency exemption, other deviations to save cost can be suggested

**All California programs (and local jurisdictions for that matter) must offer a density bonus of up to 35% as well as additional incentives to all developers who include affordable housing in new developments. The amount of the density bonus and the number of additional incentives are dependent upon the % of affordable units provided and the level of affordability of those units (higher density bonus and more incentives for a higher % of affordable units serving lower income levels). But, developers do not always request this bonus because of local opposition and because the size of the bonus is not sufficient in some markets (given high land costs) given the political effort that must be expended to obtain it. Many communities resist granting the bonus and only grant it when hard-pressed by developers.

Exhibit B

Examples of Developer Incentives/Cost Offsets From Inclusionary Housing Programs Across the U.S.

Boston, Massachusetts	**--None**
Boulder, Colorado	--**Exemption from the Housing Excise Tax** for permanently affordable units only --**Waiver of development excise taxes** (*but only if providing more than the baseline requirements of 20% affordable units*) --**Exemption from Growth Management requirements (***but only if providing at least 35% permanently affordable units)*
Brentwood, California	**Developer must apply for incentives and must show that they are necessary to the financial feasibility of the development** --**Density bonus** of 9% above the midpoint of the density range established in the general plan and zoning code (no affordability requirement on density units; cumulative density may not exceed the maximum density set forth in the city's general plan or zoning code) --**State Density Bonus Requirements – Up to 35% Density Bonus** (must be included with above density bonus)* --**Fee Deferrals** (processing fee and impact fees) --**Flexible Zoning/Design Standards –** reduced lots sizes, setback requirements, open space requirements, landscaping requirements, interior amenities, parking requirements; height restriction waivers --**Flexible use standards –** ability to construct duplexes or triplexes on corner lots in SF areas; --**Expedited permitting** --**Direct financial assistance –** loan or grant from collected housing trust fund dollars ***but only to those that exceed minimum affordable unit counts required*** ***Despite the long list provided above, Brentwood, by its own admission, allocates cost offsets quite carefully and conservatively and views the affordable housing requirement as a standard cost of doing business in the community.***
Brookline, Massachusetts	--**Parking reduction –** affordable units only require 1 parking space, instead of 2 parking spaces **(as of right)** --**Different materials and different finishes in affordable units**, but materials still must be approved by city
Cambridge, Massachusetts	--**Density bonus (30%)** (15% market-rate, 15% affordable) --**Increased FAR for affordable** units (as of right) --**Decreased minimum lot area requirements** (such that two additional dwelling units per lot are permitted for each additional affordable unit) (as of right)

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	--**No variances required** to construct affordable units (as of right)
Carlsbad, California	**No formal offsets** – developers may apply for assistance; city may provide density bonuses on a case-by-case basis.
Chapel Hill, North Carolina	**None (expedited process on the books but never used)** --fee waivers and density bonuses for 100% affordable developments
Chicago, Illinois	**CPAN** – marketing assistance, landscaping assistance, purchase price assistance, cash subsidy (a density increase can be provided in some cases if negotiated with the developer) **Affordable Requirements Ordinance (ARO**) – implicit in requirement – 1) city land; 2) cash subsidy; 3) increase in zoning density or change from non-residential to residential; and 4) PUD. **Downtown Density Bonus –** Additional Floor Area (25% of which must be dedicated to affordable housing) **(as of right)**
Davidson, North Carolina	**None**
Davis, California	--**State Density Bonus** up to 35% density bonus* --**Local Density Bonus --** one-for-one density bonus for on-site affordable units **(as of right)** --one-for-one density bonus for donation of land (based on 15 units per acre for ownership housing and 20 units per acre for rental housing) --bonus units are included in the calculation for % affordable housing --**Flexible Zoning --** relaxed zoning requirements (discretionary – tailored to each project) --**Parking reductions** (discretionary – tailored to each project) --**Setback reductions** (discretionary – tailored to each project) --**Expedited/streamlined permitting** (discretionary – tailored) **--Federal, state, and local subsidy dollars** may be used to meet requirements ***Must do a mix of two and three bedroom units to meet the affordable requirements***
Denver, Colorado	--**Cash Subsidy**/**Fee Reimbursement –** standard per affordable unit reimbursement from the affordable housing special revenue fund up to $5,500 per affordable unit built, up to 50% of the total units in the development up to a maximum of $250,000 per development (done because Colorado state law prevents the provision of fee waivers) -- can obtain a higher cash subsidy – up to $10,000 per affordable unit (up to 50% of the units in the development) for units affordable at or below 60% of the AMI -- **Density Bonus (10%)** ***but only*** for affordable units above the 10% requirement) --**Reduced parking requirement** (***but only*** for affordable

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	units above the 10% requirement) – reduction of 10 parking spaces for each additional affordable unit --**Expedited permit process** (***but only*** for affordable units above the 10% requirement)
Fairfax County, Virginia	-- **Density Bonus** -- sliding scale --up to 20% density bonus for 12.5% affordable units --up to 10% density bonus for 6.25% affordable units --density bonus plus parking reduction for mid-rise elevator buildings
Highland Park, Illinois	**<u>As of Right but must submit development plan/application to City</u>** --**Density Bonus (20%** -- one for one) **(As of right)** --**Discretionary Density Bonus (Up to 1.5 to 1)** in planned unit developments **(discretionary)** --**Fee/Tax Waivers --** Waiver of all applicable application fees, building permit fees, plan review fees, inspection fees, sewer and water tap-on fees, demolition permit fees, the demolition tax, and such other development fees and costs which may be imposed by the City --**Reduced interior finishes** on the affordable units --**Reduced gross floor area** in the affordable units
Irvine, California	**<u>Developer must apply to receive any of the offsets</u>** --**Density Bonus** (Up to 35%) (California state law)* --**Reduced parking requirements** --**Reduced fees** --**Reduced park land set-aside requirement** --**Expedited permit processing**
Longmont, Colorado	--**Development Fee Reduction Program** – 20% fee reduction up to 50% (not as of right; $2,400 savings per rental unit and $5,230 savings per for-sale unit on average) --**Affordable Housing Incentive Program** – *only available* to developers who go beyond baseline requirements (12-20% set aside at certain income levels instead of 10% set aside) *__Expedited Review__ *__Density Bonus__ *__Flexible Zoning/Development Standards –__ lot size and setback reductions, increased density *__Additional fee waivers__ (including water/wastewater) – 50-75% for for sale and 25-50% for rental *__Fee Deferrals__ *__Marketing Assistance__
Madison, WI	**<u>Developer may request offsets, in the amount of the revenue differential between a development without any IZ units and a development with IZ units, from the Director of the Department of Planning and Development</u>** -- **Density Bonus**

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Exhibit B

	-- **Reduction in Park Development Fees** -- **Reduction in park dedication requirements** -- **Parking reductions** --**Cash Subsidy** of up to $5,000 per affordable unit for for sale units to households at or below 50% AMI and rental units to households at or below 40% AMI (used after other offsets used) --**Cash Subsidy** of up to $2,500 per affordable unit for on-site units in developments with 49 or fewer detached units OR for developments with 4 or more stories and 75% of parking underground (used after other offsets used) --**Additional floor/story in downtown area** --**Additional FAR** --**Mixing multi-family and two-family housing types into single-family developments** (with limitations on concentrations) --**Expedited review** --**Residential development in areas** that currently do not allow it --**Reduced street widths** --Can use **state and federal subsidies** ***if*** you make units more affordable
Montgomery County, MD	--**Density Bonus (**sliding scale **up to 22%** density bonus) **(as of right)** --**Fee Waivers** --**Flexible Uses** up to 40% attached unit development in detached unit development area --**Decreased minimum lot area requirements** --**10% compatibility allowance**
New York City	--**Density Bonus (33%)** (on top of upzoning already granted in the district) **(as of right)** --**Property Tax Break** (421-A) --**Tax-Exempt Bonds and 4% Tax Credits**
Newton, Massachusetts	--**None** --May use federal, state, or local subsidies BUT ONLY IF doing more affordable housing than required, etc.

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Sacramento, California	**Apply to Planning Director – all negotiated** --**Density Bonus --** up to 35% density bonus* --**Expedited permit process** --**Fee waivers, reductions, or deferrals** --**Flexible Zoning/Relaxed Development Standards/Flexible Uses** (e.g. road widths, curbs and gutters, parking, minimum lot size, lot coverage, alternative housing types,) --**Parking Reductions** --**Flexible Uses** ability to develop duplexes, half-plexes, patio homes and second units --**Interior Finish reductions** --**Priority for Subsidies** – local public funding **All must be applied for to the Planning Director
San Diego, California	**Future Urbanizing Area – no offsets** **Citywide Program** – see below **(all negotiated)** --**Up to 35% density bonus**– no local bonus* --**Expedited Permitting** --**Fee Reductions** -- reduced sewer and water fees --**Other possible individualized offsets** negotiated on a case by case basis (parking reductions, height, setbacks, etc.) --**Federal and state subsidies** are available ***but only with*** greater affordability or deeper affordability
San Francisco, California	--**Up to 35% density bonus** (not often granted)* --**Fee reductions** on the affordable units **(as of right)**
Santa Fe, New Mexico	-- **Density Bonus** (11 – 16%) --**Fee Waivers** --**Relaxed development standards**
Santa Monica, California	--**Up to a 35% Density Bonus** (State Law)* --**Height Bonus** (10 feet in non-residential district; more limited in residential districts) --**Increase in FAR** in non-residential districts by .5 times the FAR dedicated to affordable housing --**Increase in FAR** in residential districts by 25% (total bonus from state and local bonuses cannot exceed 50%) --**Flexible Zoning/Development Standards --** Reduced parking, variances/reductions to side year, front, or rear setback requirements or parcel coverage requirements, greater allowable floor area or floor area discounts in certain districts
Stamford, Connecticut	--**No offsets** for baseline 10% affordable at 50% AMI --**Density Bonuses for units above 10% affordable** R-5 – 12 units per acre -- bonus to 22 units per acre if 1/5 of bonus units are affordable R-MF – 20 units per acre – bonus to 40 units per acre if ¼ of bonus units are affordable R-H – 60 unit per acre – bonus to 80 units per acre if 1/5 of bonus units are affordable

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	--**Flexible Zoning --** In practice, height, setback, and other zoning requirements ***may*** also be adjusted by the Zoning Board in conjunction with the density bonuses
State of California – Density Bonus and Other Incentives – only for "on-site" housing	--**Up to a 35% Density Bonus** (As of Right – if the local government cannot demonstrate adverse effects on health safety, or the physical environment that cannot be mitigated) Amount of bonus based upon the % of units dedicated to very low, low-income, and moderate-income households --**Other incentives** – reductions in setbacks and square footage requirements, parking reductions, approval of mixed-use zoning, other incentives or concessions proposed by muni or developer that result in "identifiable, financially sufficient, and actual cost reductions" --Available even for condo conversions --Resistance to granting in some towns/lack of use in others
Tallahassee, Florida	--**Density Bonus (25%)** (affordable % not counted among bonus units) --**Expedited Review** --**Flexible Zoning/Flexible Uses** (mixing housing types, setback and lot size requirements, buffering and screening requirements within the development) --**Transportation concurrency exemption** --**Other deviations** from local cost-imposing requirements can be suggested without a fee

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Exhibit C

Program Interviews

Sheila Dillon, Boston Redevelopment Authority, Boston, Massachusetts

Cindy Pieropan, Housing Planner, City of Boulder, Colorado

Kwame Reed, Senior Housing Manager, Department of Community Development, Brentwood, California

Francine Price, Housing Development Manager, the Head of the Housing Division within the Department of Planning and Community Development, Brookline, Massachusetts

Chris Cotter, Housing Director, City of Cambridge, Massachusetts

Frank Boensch, Management Analyst, Carlsbad Department of Housing and Redevelopment

Rae Buckley, Housing Planner, Town of Chapel Hill, North Carolina

Danielle Foster, Housing Programs Manager, Planning and Building Department of Davis, California

Jackie Morales-Ferrand, Director, DHCD, City of Denver

Dawn Blobaum, Town Manager, Town of Davidson, North Carolina

Jaimie Ross, Executive Director, 1000 Friends of Florida

Lee Smith, Senior Planner, City of Highland Park, Illinois

Mark Asturias, Housing Manager, Department of Housing Development, Irvine, California

Shawn Hill, Planning Department, Jackson, Wyoming

Kathy Fedler, CDBG and Affordable Housing Coordinator, City of Longmont, Colorado

Barb Constans, Department of Planning and Development, City of Madison, Wisconsin

Lisa C. Schwartz, Senior Planning Specialist, Montgomery County Department of Housing and Community Affairs, Montgomery County, Maryland

Trisha Guditz, Housing Development Coordinator, City of Newton, Massachusetts

Brad Lander, Director, Pratt Center for Community Development, New York City, New York

Chandra Egan, Inclusionary Housing Program Manager, Mayor's Office of Housing, San Francisco, California

Doug Shoemaker, Deputy Director, City of San Francisco Mayor's Office of Housing.

Greg Sandlund, Assistant Planner, Planning Department, Sacramento, California

Peter Armstrong, Project Manager, San Diego Planning Commission, San Diego, California

Norman Cole, Principal Planner, City of Stamford, Connecticut

James Kemper, Senior Administrative Analyst, Department of Housing and Redevelopment, Santa Monica, California

Deepika Andavarapu, Planner, City of Tallahassee, Florida

Appendix D

Feasibility Studies

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Task 3 – Compensatory Benefits to Developers for Provision of Affordable Housing:

Inclusionary Housing: Lessons from the National Experience

Addendum #1

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Submitted To:

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Addendum #1 to the Report

In light of additional research and exploration of issues raised during the comment period, the following paragraphs are being submitted to correct and clarify the contents of the report as submitted in November.

The following paragraphs supplement or correct the information provided under III.A. in the sub-section on *Density Bonuses:*

The density bonus provided under the MPDU program in Montgomery County, Maryland runs from zero percent (0%) (if the development is only providing 12.5% affordable housing) to twenty-two percent (22%) (if the development is providing 15% affordable housing).

Some inclusionary housing programs do not require any of the "bonus units" to be affordable, such as Brentwood, Highland Park, Tallahassee, or the State of California's density bonus law. So, for example, under the State of California's density bonus law, if you include 10% affordable housing in a 100 unit subdivision, you will receive a 20% density bonus, which will allow you to build 20 additional market-rate units. As a result of the bonus, the developer receives approval to build a 120 unit subdivision where 10 of the units are affordable and 110 are market-rate.

However, many other programs – including but not limited to Cambridge, Massachusetts; Davis, California; Fairfax County, Virginia; Montgomery County, Maryland; Stamford, Connecticut; New York City, and the Chapter 40B program in Massachusetts – all require some percentage of the "bonus units" to be affordable. In Montgomery County, Maryland, the percentage of affordable housing required (12.5% to 15%) is calculated from the total number of units in the development. A subdivision development that would include 100 homes under the standard zoning requirements achieves no density bonus if it only includes 12.5% affordable housing (the baseline requirement under the ordinance). This results in a development with eight-seven (87) market-rate homes and thirteen (13) affordable homes (the affordable requirement is always rounded up). However, this same subdivision development can achieve a 22% density bonus if 15% of the total number of homes in the development are sold at the affordable price to eligible households. The result is a one hundred twenty-two (122) home subdivision where nineteen (19) homes are affordable and one hundred three (103) homes are market-rate. Instead of only eighty-seven market-rate homes (under the first scenario), the developer can build one hundred three (103) market-rate homes as a result of the density bonus by making 19 of the homes affordable instead of just 13.[1]

In New York City (where the inclusionary development receives a 33% density bonus, but 20% of the *total units* in the development must be affordable under the program); in Davis, California; and in Fairfax County, Virginia; the calculation of the affordable percentage also incorporates the density bonus units, thereby including them in the percentage required. In Stamford, anywhere from 1/5 to 1/4 of the density bonus units that are granted must be dedicated to affordable housing (in addition to the baseline 10% affordable requirement under the ordinance). Finally, under the 40B program in Massachusetts, the developer may receive an increase in density and other kinds of zoning relief, but 25% of the *total units* in the development must be affordable.

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[1] It is important to note that according to the text of the current Montgomery County MPDU ordinance and according to Lisa Schwartz, Senior Planning Specialist for the Montgomery County Department of Housing and Community Affairs, the MPDU policy now requires that the affordable housing percentage be calculated off of the total number of units in the development (including any bonus units). However, in the past, for some developments, the percentage of affordable housing required was calculated off of the maximum number of units allowed under the existing zoning (e.g. 100 units), instead of from the total number of units in the final development (e.g. 122 units).

NEW JERSEY COUNCIL ON AFFORDABLE HOUSING
TASK 3 – COMPENSATORY BENEFITS TO DEVELOPERS FOR PROVISION OF AFFORDABLE HOUSING

Final Report Submitted To:
New Jersey Council on Affordable Housing
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FINAL – May 2, 2008

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EXECUTIVE SUMMARY

In its review of New Jersey Council on Affordable Housing's (COAH) Third Round substantive and procedural rules and regulations, the Appellate Division of the Superior Court of New Jersey identified, among other challenges, issues related to the mechanisms municipalities have to work with towards fulfilling affordable housing requirements. Specifically, it determined that the ultimate responsibility for establishing a real estate environment conducive to meeting affordable housing needs rests with the municipality through its land use ordinances, and that therefore municipalities must offer development incentives sufficient to generate a realistic opportunity for developers to produce new affordable housing.

To the extent that the provision of affordable housing is deemed an appropriate public interest, governments have a number of mechanisms at their disposal to actively encourage greater production within their jurisdictions.[1] These tools include offering density bonuses, easing construction-related requirements, and/or providing financial subsidies.

Therefore, we can generate an illustrative pro forma statement to determine the effect on developer profitability of the affordable housing requirement, and then evaluate a variety of types and scales of compensatory benefits. Thus, we can solve for the various incentive amounts necessary to offset the cost of the affordable housing requirement, and can then compare that scale of incentives with levels that municipalities might choose to offer, to determine if such levels can be considered as sufficient.

Importantly, we assume that affordable units are allowed to differ in size from market units. According to an extensive literature and best practices review conducted by Applegate and Thorne-Thomsen, the most common sizing of affordable units is two units on the same footprint as one market unit, which would result in an approximate per-unit construction cost reduction of 40 percent.

From there, the incentive levels required to offset the affordable housing requirement depend on the set-aside ratio and on the affordability level of the affordable units: the more affordable units required, and the more deeply affordable they must be, the more offsetting incentives that are needed. For the purposes of this analysis, we use base assumptions of a 20 percent set-aside ratio (i.e. one affordable unit among five total units, or one for every four market units) and a price that is affordable to someone making 55 percent of median household income. These levels represent policy decisions at the state level, in terms of the amount of affordable units and depth of affordability that is being sought.

Based on these assumptions and scenarios, we can determine the scale of incentives required to compensate for the affordable housing requirement. For example, assuming a "one for one" density bonus, we find that a 4.5 percent construction cost reduction on all units is needed if all additional units are market units, or 7.0 to 7.8 percent if additional affordable units are built such that the original ratio

[1] An extensive literature and best practices review was conducted by Applegate and Thorne-Thomsen to inventory these various mechanisms, and to highlight their use and effectiveness around the country.

of affordable units to market units is retained; alternatively, a straight density bonus would have to be in the neighborhood of 28 to 32 percent if all additional units are market units, and 39 to 49 percent if the set-aside ratio is retained (see Figure E.1).

Figure E.1 – Illustrative Pro Forma Results: Incentive Levels Needed to Offset the Cost of Building One Affordable Unit for Every Four Market Units (Affordability Defined as Affordable to Someone Making 55 Percent of Median Household Income)

ASSUMING 20% SET-ASIDE RATIO	HIGH LAND COST AREA (land = 37% of project costs)		LOW LAND COST AREA (land = 26% of project costs)	
	If all DB units are market	If set-aside ratio retained	If all DB units are market	If set-aside ratio retained
1. Density bonus %	27.9%	39.4%	32.2%	49.1%
2a. Construction cost reduction required	19.3%		14.3%	
2b. Construction cost reduction, assuming 20% DB	4.5%	7.8%	4.5%	7.0%
3a. $000 cash subsidy per affordable unit (ongoing, annual)	$73.5		$54.9	
3b. $000 cash subsidy per affordable unit (one-time, upfront)	$216.9		$161.8	

Source: Econsult Corporation (2008)

The results from these scenarios inform our study in the following ways:

- First, our illustrative examples calculate what is necessary to completely offset the cost of the affordable housing requirement; certainly, in the marketplace, there are situations in which an incentive does not need to completely offset the cost of the affordable housing requirement for it to be effective in inducing developers to build.

- Second, these illustrative examples utilize very aggressive assumptions related to the provision of affordable housing: the set-aside ratio and the affordability level. These are policy choices that can be made, but it must be stated that requiring more affordable units and/or requiring that those units are more deeply affordable necessarily means higher levels of incentives are needed to offset the associated costs.

- Third, in fact many government entities that have instituted affordable housing requirements are located in extremely attractive real estate markets, and thus developers are often so motivated to build there that they are willing to bear the additional cost of the affordable housing requirement with zero incentives, density-related or otherwise.

- Fourth, many affordable housing requirement programs encourage the mixing of incentive types. Thus, while density bonuses alone might require fairly high density increases, density bonuses in conjunction with construction cost reductions require more reasonable density increases. On a related note, for municipalities who are constrained in offering density bonuses by environmental regulations, state or regional planning mandates, or other restrictions, other offsetting incentives besides density bonuses will thus have to be considered and offered.

Of course, municipalities need not limit themselves to the minimum affordable housing requirements. A municipality might be motivated to go beyond minimum affordable housing requirements if COAH gives additional credit for doing so, and thus understanding the scale of incentives required to offset requirements at different set-aside ratios and affordability levels can provide some guidance on such trade-offs.

Importantly, the results above assume that land costs are 26 percent of total project costs, which represents the lowest land to project cost ratio among the COAH regions. The higher land costs are as a percentage of total project costs, the lower the density bonus that is required, since the mechanism by which additional market units offset the cost of building affordable units is by allowing the developer to spread the project's fixed costs (i.e. land costs) over more units. Thus, higher fixed costs as a percentage of total project costs mean that there is a lot to be gained back by the developer in spreading out those higher fixed costs over additional market units.

Therefore, higher density bonuses are needed in lower-income areas, while lower density bonuses are needed in higher-income areas. This reconciles with national findings: in many cases, higher-income areas can institute affordable requirements with little or no offset density bonus, while lower-income areas often struggle to enable the construction of market units, and thus imposing an affordable requirement would require high levels of offsetting incentives to induce development.

Our illustrative scenarios thus use lower-income areas to determine what could be deemed a presumptive density increase that municipalities can offer to automatically obtain COAH certification. Certainly, though a higher-income area that offers a lower density increase would not receive automatic certification, its plan would likely be well received by COAH.

Non-residential construction also generates an affordable housing obligation, but housing units cannot always be included at the same site, and non-residential developers may not have the expertise or desire to build residential units. Non-residential developers have heretofore then paid a development fee instead of directly bearing the cost of building affordable units. If intended to completely pay for the cost of building affordable units, the development fee would be somewhere between 2.8 percent and 10.1 percent, based on building type (see Figure E.2).

Figure E.2 – Cost of Affordable Housing as a Function of Non-Residential Construction

Building Type	Office	Retail	Factory	Storage	Manuf	Theater	Restaurant	Library	Arena	Stadium	K-12	Hospital	Hotel
Sample # SF in Project	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Average $ Constr Cost/SF	$ 112.5	$ 157.6	$ 94.8	$ 84.8	$ 159.4	$ 151.7	$ 127.3	$ 134.6	$ 131.3	$ 154.3	$ 152.2	$ 306.5	$ 233.7
Total Sample Project Cost	$ 11,252,510	$ 15,761,960	$ 9,477,960	$ 8,479,500	$ 15,944,850	$ 15,170,530	$ 12,727,920	$ 13,459,900	$ 13,131,620	$ 15,434,000	$ 15,218,920	$ 30,648,190	$ 23,367,170
Approx. Project Cost / Market Value	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Assessed Value / Market Value	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Sample Project Assessed Value	$ 22,505,020	$ 31,523,920	$ 18,955,920	$ 16,959,000	$ 31,889,700	$ 30,341,060	$ 25,455,840	$ 26,919,800	$ 26,263,240	$ 30,868,000	$ 30,437,840	$ 61,296,380	$ 46,734,340
Task 4 Jobs/1000 Gross SF	2.6	1.6	1.1	1.3	1.4	1.5	2.9	1.5	3.1	2.3	1.6	2.3	1.6
Jobs Created by Project	259.4	156.4	111.7	134.7	143.4	146.4	293.3	147.3	312.8	234.6	156.4	234.6	156.4
Jobs Per Affordable Unit	16	16	16	16	16	16	16	16	16	16	16	16	16
# Affordable Units to be Built	16.2	9.8	7.0	8.4	9.0	9.2	18.3	9.2	19.6	14.7	9.8	14.7	9.8
$ Cost Per Affordable Unit	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735
$ Cost for All Affordable Units	$ 2,200,397	$ 1,326,806	$ 947,719	$ 1,142,528	$ 1,216,239	$ 1,242,106	$ 2,487,762	$ 1,249,636	$ 2,653,613	$ 1,990,210	$ 1,326,806	$ 1,990,210	$ 1,326,806
$ Cost as a % of Assessed Value	9.8%	4.2%	5.0%	6.7%	3.8%	4.1%	9.8%	4.6%	10.1%	6.4%	4.4%	3.2%	2.8%

Source: Econsult Corporation (2007)

1.0 CONTEXT

1.1 Court Findings

In its review of New Jersey Council on Affordable Housing's (COAH) Third Round substantive and procedural rules and regulations, the Appellate Division of the New Jersey identified three general groups of challenges to COAH's Third Round rules:

- Calculation issues,
- Allocation issues, and
- Compliance mechanisms.

Tasks 1, 2 and 4 of our work for COAH address various calculation and allocation issues discussed by the Court; in other words, they are concerned with estimating the total amount of affordable housing obligations, and its distribution across municipalities. Task 3, on the other hand, primarily deals with rulings on two specific issues in the third category, both related to the mechanisms municipalities have to work with towards fulfilling affordable housing requirements:

- The Court's decision to invalidate "the regulations that permit municipalities to provide affordable housing without offsetting benefits" to the developers,
- The Court's decision to invalidate the rules governing the "payment in lieu of" provision where municipalities negotiated with developers over the payment amount.

Throughout the Court's decision, and particularly applicable to the compliance mechanisms component of the regulations, is the determination that the ultimate responsibility for establishing a real estate environment conducive to meeting affordable housing needs rests with the municipality through its land use ordinances.

Consequently, in its findings on the validity or invalidity of various "compliance mechanisms", the Court ordered that COAH develop new regulations that require municipalities to provide sufficient financial incentives or regulatory relief to developers to make sure the provision of affordable housing in the jurisdiction is economically viable:

> Permitting municipalities to demand that developers build affordable housing without any additional incentives provides municipalities with an effective tool to exclude the poor by combining an affordable housing requirement with large-lot zoning and excessive demands for compensating fees in lieu of providing such housing. Under N.J.A.C 5-94-4.4, municipalities need not consider the economic feasibility of complying with the ordinance. Yet, this is counter to the very definition of realistic opportunity adopted by COAH. Economics get factored into the equation only when the municipality exercises its right to require a developer to provide more than one affordable unit for every eight market-rate units or more than one unit for every twenty-five jobs. A regulatory regime

> that relies on developers to incur the uncompensated expense of providing affordable housing is unlikely to result in municipal zoning ordinances that make it realistically probable that the statewide need for affordable housing can be met.[2]

Thus, the Court stated that COAH is responsible for reviewing proposed zoning plans to determine whether the plan creates a "realistic opportunity" for the construction of the municipality's fair share of affordable housing. Furthermore, the Court explicitly requires that incentives be offered, and that blanket affordable housing requirements without sufficient economic incentives would violate the Mt. Laurel doctrine:

> We conclude that the Mount Laurel doctrine, as articulated in Mount Laurel II and Toll Bros., and as codified by the FHA, requires municipalities to provide incentives to developers to construct affordable housing. Land use ordinances requiring all developers to provide some affordable housing conflict with the essence of the Mount Laurel doctrine, which requires that municipal land use ordinances create a realistic opportunity.

Implicit in this language is the notion of each municipality offering "sufficient" incentives – also known as compensatory benefits - to developers in order to compensate for additional costs imposed by the affordable housing requirements. This is particularly important since the primary Round Three COAH "growth share" ties each municipality's affordable housing obligation to its expected future real estate development.

Such a mandate, requiring municipalities to provide incentives as necessary to achieve their fair share housing obligation, begs the question, "What constitutes 'sufficient'?" This will be the focus of much of this Task 3 report. However, if the Court calls for municipalities to provide incentives to developers in order to satisfy their fair share obligations, one must first ask an even more basic question: "Do incentives work in this case?" In other words, there is some question as to whether incentives would have any effect on the additional provision of affordable housing.

We will tackle that important question shortly. Assuming for a moment that incentives do in fact work, one must then determine how this court mandate gets translated into COAH's regulatory language. This is, as stated above, the primary objective of this report: to satisfy the requirements of the Mount Laurel decision, municipalities must offer sufficient incentives to create a realistic opportunity for affordable housing units to be built; and to properly certify participating municipalities, COAH must then determine what constitutes a "sufficient" set of incentives.

This report is structured to provide COAH with an understanding of sufficient incentives for the purposes of its ongoing substantive certification role, as well as with some guidance for its rulemaking. Specifically, we begin here in Section 1 with the necessary legal and economic context from which we can more adequately cover the subject of incentives for affordable housing. Section 2 provides an inventory of the wide range of public policy tools that municipalities have at their disposal to induce affordable housing

[2] The Appellate Division of the Superior Court of New Jersey in the matter of the adoption of N.J.A.C. 5:94 and 5:95 by COAH (January 25, 2007), p. 103.

provision. Section 3 provides illustrative pro forma analyses to demonstrate to COAH the varying impacts of different incentives schemes. Finally, Section 4 returns to the key questions at hand and summarizes the first three sections to the end of providing specific guidance on regulatory language that can fulfill the Court's requirements.

1.2 Basic Methods for Providing Affordable Housing

It is important, when discussing incentives for providing affordable housing, to unpack the mechanics by which affordable housing is brought to the marketplace. It is important to note that, absent direct action, affordable housing can be and is in fact created on its own, through normal residential filtering, whereby previously unaffordable houses lose value over time until they become affordable, the previous owners having vacated the houses by trading up to more valuable ones.[3]

Direct approaches to bringing affordable housing to market include the rehabilitation of existing substandard housing stock, conversion of non-residential buildings into affordable housing units (for sale or rental), group homes or accessory senior apartments, and buy-downs of existing housing stock with conditions on future transfers. In addition, new construction can provide housing for low and moderate income households. This new construction can be provided in the following ways:

- By the developer on the same site as market rate units – this is known as "inclusionary housing," and the ratio of affordable units to market rate units is usually a pre-determined, "set-aside" proportion;
- By the developer (or another private developer) on a different development site from the market rate units but still in the same municipality;
- By the local government on a different development site from the market rate units but still within the municipality – this is done by utilizing the developer fees or "payments in lieu of" that are paid by the developer; or
- Outside of the municipality altogether – as determined by a Regional Contribution Agreement (RCA).

Here we briefly examine these basic methods, and comment on the types of incentives that could influence them. More detailed examination of various parts of these topics can be found in subsequent sections of this report.

[3] The extent of filtering and its capacity to address low-moderate income needs was also questioned by the Court, and is the subject of Task 2 of this overall effort.

Inclusionary Development Set-Asides

Housing "set-asides" are a fairly common method of encouraging or requiring affordable housing. Under set-aside programs, developers are required to build a portion of new or rehabilitated units that are affordable to people with low to moderate income levels. Developers can alternatively choose to pay a per-unit fee to relieve themselves of this obligation. In New Jersey, inclusionary developments are not charged developer fees.

To offer a couple of out-of-state examples, in Montgomery County, Maryland, between 12.5% and 15% of the houses in new subdivisions of 20 or more units must be moderately priced dwelling units (in accordance with the County's Moderately Priced Housing Law of 1974). This requirement has generated over 10,000 units of affordable for-sale and rental housing.[4]

The Department of Neighborhood Development in Boston requires rental housing developments with 10 or more units to include a minimum set-aside of 10% of the rental housing units for homeless families and/or individuals with an income no greater than 30% of the median income for the area.[5] Developers have the choice of setting aside units that meet this requirement, or paying a $52,000 per unit fee into the trust fund.

Set-asides on these orders of magnitude have been part of the established procedure in New Jersey for many years. However, inclusionary development is still viewed in many communities as creating too much density, generating excessive infrastructure, and increasing local government costs.

Off-Site Provision within Municipality (by Private Developers): Using Payments in Lieu

A developer may provide the required affordable housing units at a different location than its market rate housing development, but still within the municipality. In this case, municipalities may charge payments in lieu of construction, the proceeds of which can then be used for the construction of affordable housing units elsewhere in the municipality.

The Court declared invalid COAH's practice of allowing municipalities to negotiate "payments in lieu of" amounts for not directly providing affordable units, noting that both municipalities and developers can have incentives to minimize the number of affordable housing units and therefore have a tendency to under-price these payment levels. COAH proceeded to modify its regulations regarding payments in lieu (N.J.A.C. 5:94-4.4) by developing three options for municipalities to create "standard guidelines" for pricing the payments in lieu:

- Cost based on site development

[4] Montgomery County, Maryland website.

[5] City of Boston website.

- Cost based on "Buy Down" program
- A hybrid of both approaches

Regional Contribution Agreements (RCA)

Regional Contribution Agreements (RCA) are, in a sense, inter-municipal "payment in lieu of" arrangements, whereby payments are made between municipalities, rather than within a municipality, such that affordable housing requirements in one municipality can be transferred to another municipality, in exchange for a payment.

1.3 Do Incentives Work to Generate More Affordable Housing?

Of significant and indeed seminal interest to this whole discussion is the basic question posed above: "Will incentives work?" That is, will the existence of incentives lead to the provision of more affordable housing units? Since the Court has ordered municipalities to provide necessary incentives in order to meet Mount Laurel fair share objectives, such a question is an important one to address.

Fundamentally, the introduction of inclusionary or other affordable housing requirements tends to impose a cost on development, because of the requirement to build a certain portion of housing units that will be unprofitable (i.e. construction and other costs will be higher than the sales price or the ongoing rental revenue). Such a requirement would require developers to cross-subsidize the affordable units with profits from the market rate units, thereby lowering overall profitability. If that inclusionary requirement is universal, the drag on profits will make the land upon which to develop less valuable, thus lowering demand for land, and hence land values for any locations where housing could be built.[6]

Lowering land values, as long as prices do not fall below those associated with the next-best use of the particular parcel, still allows the profitable production of affordable housing. In this scenario, all things being equal, developers can still make a profit, because the additional cost of building affordable units is somewhat or even totally offset by lower land acquisition costs. Meanwhile, those who need affordable housing, and the groups that advocate for them, win because the supply of affordable housing increases. Landowners, on the other hand, lose because they receive less from the sale of their land.[7]

[6] Note that with reduced value associated with building housing, more land will be used for other purposes, and less land will be used for housing, all else equal.

[7] To the extent that land prices drop below this level, then some of the landowners' losses are due to reduced housing production. This is because the amount of economically developable land will be reduced as its return for that use is reduced.

In the reverse direction, the introduction of offsetting incentives, or compensatory benefits, tends to increase the price of land back to its original level prior to the affordable housing requirement,[8] because it makes developing on that land more profitable and thus increases its value. To the extent that the supply of developable land is fixed (in economic terms, "inelastic," or alternatively, from the perspective of a typical supply and demand curve, a completely vertical supply curve), it can be argued that any incentive offered to developers will not in fact lead to new affordable housing development, but will instead be fully capitalized[9] into the price of the land, such that there is no net incentive to be gained by the developer. In such a scenario, only the landowner wins.

On the other hand, if the supply of developable land is not fixed (i.e. it is "elastic"), then incentives may indeed generate more production, and not result in as much or any price appreciation. This is because when the supply of developable land cannot change, the marketplace's only possible response to the increased attractiveness of the land is increased prices, as developers are now willing to pay more for the right to develop the land; but when the supply of developable land is not fixed, the marketplace can respond to the increased attractiveness of land by adding more land to the marketplace.

In fact, it is possible for land supply to go up or down, by converting farmland into developable space or by setting aside previously developable land as open space, to give but two examples. Thus, if the supply of developable land is not totally fixed, incentives will tend to increase land prices, but not so much as to completely offset the benefit of the incentive to the developer. As a result, incentives will work to induce provision of affordable housing. Empirically, we have seen that economic incentives in the real estate market have had demonstrable positive effects on production.[10] This suggests that land supply is not perfectly elastic, and that incentives are not fully capitalized into the price of land, which would render them completely ineffective, but in fact do change the development equation so as to induce more construction than would have otherwise occurred. [11]

In principle, basic supply and demand theory would argue that the net effect of the introduction first of an affordable housing requirement and then of offsetting incentives would be a price of land and a quantity of development that is the same as the status quo before these changes. Landowners would neither gain nor lose, and developers would be able to clear their originally intended profit levels.

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[8] This discussion deals with a market in which a restriction (i.e. the affordable housing requirement) is imposed, and incentives are then offered. The first action, imposing the affordable housing requirement, lowers demand for development, and hence both prices and land consumed for residential development will tend to fall. The second action, making offsetting incentives available, reverses this effect, mitigating some or all of the effects of lower demand. This is true whether one tends to believe the original price or the post-requirement price is the more "efficient" price.

[9] Capitalization occurs in an asset whenever there is a change in a characteristic or attribute related to the asset. These can be positive or negative changes; if the former, the asset becomes more attractive, increasing demand for the asset, which in turn increases its market price. A similar story, with effects in the opposite direction, occurs if a negative change or characteristic is introduced.

[10] See Building Industry Association: Philadelphia Tax Abatement Analysis, Econsult Corporation (September 2006), in which it was proven that the ten-year property tax abatement in Philadelphia has induced a significant proportion of the new construction that took place subsequent to the existence of the abatement.

[11] This may be even more likely in states like New Jersey, where demand for open space is fairly strong, and the "border" between residential use and non-development is very responsive to prices.

1.4 Compliance Issues Raised by the Court

Overall, the Court, and most of those who have commented on its findings, emphasize one key point: the responsibility to achieve fair share of affordable housing requirements rests with each municipality, and not with private developers or the State. Further, a literal interpretation of the requirement would suggest that each municipality must offer "sufficient" incentives to produce its fair share of affordable housing.

Necessarily, then, COAH is seeking guidance in determining what constitutes a "sufficient" set of incentives. Unpacking this notion of "sufficiency" is the main objective of this report, and is the overarching topic of all of the following sections. These subsequent sections will also address some important sub-topics related to the overall topic:

- Is there such a thing as a presumptive level of incentives that can be considered sufficient, and if so, what is that level?[12]
- Should incentive levels differ across COAH regions?
- Should incentive levels differ between sales and rentals?
- Should incentive levels differ between new construction and rehabilitation?
- How should COAH deal with affordable housing requirements generated by increases in employment resulting from new non-residential construction?
- How should COAH deal with calls to expand the base of affordable housing to account for even lower-income households (also known as "affordability deepening")?
- How should COAH reconfigure its "payments in lieu of" regulations?

All of these sub-topics will be addressed indirectly in Sections 2 and 3. They will then be directly discussed in Section 4, as we summarize our findings from Sections 1, 2, and 3, and provide guidance to COAH on regulatory language moving forward.

[12] COAH's Second Round Rules, for example, set six units per acre as a presumptive density, which meant that municipalities that offered that incentive were presumed to have created a realistic opportunity for the construction of affordable housing within the municipality.

2.0 TAXONOMY OF DEVELOPMENT INCENTIVES

2.1 Overview of Government Interventions

To the extent that the provision of affordable housing is deemed an appropriate public interest, city, county, and state governments have a number of mechanisms at their disposal to actively encourage greater production within their jurisdictions. These tools include incentives for both new construction and the substantial rehabilitation of existing structures.

We begin this section by discussing these mechanisms as a unit, from a theoretical standpoint. Then we describe some specific sets of tools and their various manifestations. In parallel, an extensive literature and best practices review was conducted by Applegate and Thorne-Thomsen to inventory these various mechanisms, and to highlight their use and effectiveness around the country. The Applegate and Thorne-Thomsen report has been delivered in conjunction with this study, and is largely in agreement with our findings and recommendations here.

Underlying such public policy actions are two important economic assumptions. First, the use of subsidies acknowledges that an insufficient amount of provision would take place in the free market, and that incentives are needed to induce new private investment or reinvestment. Second, as stated before, it must be true that the introduction of incentives will actually have such an effect, rather than simply driving up the market price of developable land.

It is important to note that affordable housing regulations at the local level are fundamentally different from statewide efforts. The main problem concerning affordable housing in New Jersey, as identified by the original Mount Laurel decision by the Supreme Court of New Jersey, is the variation across, not within, jurisdictions. Most affordable housing incentive programs identified during our national literature review were, in contrast, initiated at the local level, whereby municipalities sought to remedy the variation within their jurisdictions.

The "fair-share housing requirement" can be viewed as a tax or an additional cost on real estate development in any jurisdiction, all else equal. The ability of a developer to bear this additional cost burden is a function of many variables, but it is clear that, all else equal, the affordable housing inclusion requirement itself will discourage investment and result in fewer housing units produced.[13]

As a result, many municipalities look to offer offsetting incentives, or compensatory benefits, to developers, to counteract the effect of the affordable housing obligation. Broadly, these incentives fall into three categories:

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[13] This assumes, as discussed previously, that the supply of developable land is not totally fixed. In other words, if there is no ability to add or subtract to the amount of developable land, then it is alternatively possible that the introduction of an affordable housing requirement will lead to a reduction in land prices, such that from the developer's standpoint, there is no difference in profitability (i.e. the added cost of having to build affordable units is completely offset by the lower land acquisition cost).

1. Easing density and density-related restrictions;
2. Easing non-density-related regulations or requirements; and/or
3. Providing direct or indirect fiscal subsidies.

The first category of incentives allows more units to be built than would be otherwise, offsetting the reduced profit margins by enabling higher sales volumes. The second typically reduces the production cost of whatever is being built, restoring previous profit margins for developers. The third can influence either sales numbers (demand side) or production costs (supply side).

These three avenues are not mutually exclusive, and some combination of approaches can be and are utilized in New Jersey and throughout the country. While different municipalities use different types of development incentives based on unique characteristics and regional preferences, density-related incentives appear to be the most common.

Mechanically, these incentives are made available to developers via land use regulations such as zoning. This is important to note, because the underlying basis for the Mount Laurel court decision and the policy action that has resulted from it (including the creation of COAH itself) was and remains the effects of exclusionary zoning on the distribution of low- and moderate-income households in the state.

2.2 Easing Density and Density-Related Restrictions

Density-related zoning and regulations are the primary means of controlling land use in the US. In virtually all cases, density restrictions place limits on the ability of owners and developers to use their private property however they see fit. These restrictions tend to reduce the value of the land, but that reduction is offset by a greater, public purpose.[14]

Local jurisdictions have long known that restricting land use alternatives can keep property values high by artificially reducing the supply of land for new residential development (monopoly power), by increasing the quality of the land by keeping out uses and users that are perceived as less attractive, and by minimizing the cost of providing public services such as education. Combined, these efforts take the form of exclusionary zoning, and the New Jersey Fair Housing Act is a court-mandated response that offers an antidote to exclusionary zoning and its success at keeping affordable housing out of certain jurisdictions.

For any given level of restrictive land use zoning, there are a number of ways a local jurisdiction may ease those restrictions, thereby adding value to certain land assets. These include a variety of incentives that are generically referred to as a “density bonus,” defined as:

[14] Note that while large lot size zoning may reduce the value of land per acre, it also may result in higher priced housing, as wealthier owners put larger, more luxurious housing on the land.

The density bonus is a land use incentive that allows the developer to construct more units than would otherwise be allowed in a specified residential zone in exchange for the provision of affordable housing units. The assumption is that with additional units the developer is able to achieve a higher profit level on the housing development. When density is increased, the fixed costs per unit are generally lower, since the land prices, soft costs, and foundation costs can be amortized over more units.

A density bonus could be used as an incentive for increasing the production of affordable housing units. Various restrictions may apply, such as the income level at which the units must be affordable, the time period when the "bonus" units must be developed, and design standards requiring affordable units to appear similar to the market-rate units.[15]

A density bonus can take various forms, of which the first in this list is most common:

- Increased number of units per acre

  This means that for every affordable unit that a developer promises to build, he or she can build a calculated number of market rate units greater than would be allowed otherwise in the current zoning designation.

- Reduced minimum building separation requirements

  Eligible projects can construct buildings closer together than would normally be allowed, to allow for more units to be built.

- Increased Floor Area Ratio (FAR)

  The FAR refers to the total building square footage (building area) divided by the site size square footage (site area). Municipalities can increase the ratio to allow the developer more flexibility in their building design.

- Increased maximum lot coverage ratios

  Lot coverage refers to the percentage of a lot occupied by structures (buildings and driveways). Increasing the maximum lot ratio increases the land area that can be developed.

- Relaxed setback requirements

  The setback line usually refers to the distance from the public right of way line along a street, alley, sidewalk, etc. or the distance from the rear or side property line. Reducing the setback therefore increases the availability of land for development.

- Increased building height or mass allowances

[15] Metro website.

Increasing building height or mass allowances allow for more flexibility for developers in their building design, and also allow for additional and/or larger units to be built.

- Reduced minimum unit size

Reducing unit size and lot coverage requirements allows developers to build smaller and more affordable units, relative to market rate units, by reducing construction and land costs. Many programs allow unit size reduction while establishing minimum sizes.

In the first of these incentives, a municipality allows a certain percentage more units to be built in exchange for a certain percentage of affordable units. If a developer is required to have 10% of a project's units be affordable, and is allowed to build 10% more total units as a result, that is considered a "1 to 1" density bonus. Chicago, Cambridge, and Stamford are three cities that offer such an offsetting incentive.

The other incentives are a form of zoning flexibility, whereby other means of "boxing in" a development are relaxed or removed altogether, thus achieving the same results as the straight density bonus. San Diego CA, Madison WI, and Tallahassee FL are three cities that offer such zoning flexibility.

The key here is that easing density restrictions is, for most municipalities, the most direct and effective incentive to creating a more attractive real estate investment environment. These restrictions act as a deterrent to investors, and simply by allowing greater flexibility and/or increasing the amount that can be built, the land can be made more attractive to real estate investors, as will be borne out in the pro forma analysis below.[16]

2.3 Easing Non-Density-Related Regulations or Requirements

Local governments also regulate housing development by imposing restrictions or additional requirements on new supply or rehabilitated housing stock. Essentially, each of these restrictions increases the production cost of housing (whether new or rehabilitation)

- Relaxed design and development standards

These allow the developer increased flexibility and lower costs. They include reducing landscaping requirements or including fewer amenities for the affordable houses (compared with market-priced housing).

- Expedited review and permit processing

[16] Note that as discussed previously, by making the land more desirable for development, the price of land will rise, offsetting some of the positive incentive for development.

This involves streamlining the process for development in order to reduce developers' carrying costs. These can include any building permit, zoning permit, subdivision approval, rezoning, certification, special exception, variance, or any other official action of local government having the effect of permitting the development of land.

- Impact fee deferrals or waivers

  Impact fees are fees that are imposed on new constructions to pay for the expansion of new services and infrastructure, such as fire stations, police stations, sewer and water supply systems, parks, and libraries. Waving or deferring these fees can result in significant savings for developers.

- Building fee deferrals or waivers

  Building fees are for new construction, additions, alterations and repairs, and are based on the constructed area. Local governments can waive all or part of the fees for qualifying projects.

- Relaxed parking requirements

  Reducing the requirements for parking spaces per unit reduces overall costs and increases land efficiency and housing units per site. Measures can include reducing the minimum number or size of spaces, and allowing underground, structured, or tandem parking. Parking requirements can be controlled by linking to the number of bedrooms per unit (For example, 1.35 spaces for one-bedrooms, and 1.5 spaces for 2 bedrooms).

- Reduced building standards

  To relieve costly requirements that do not compromise safety, developers of affordable housing developments can be allowed significant flexibility in building standards. This allows for alternative quality levels in the development.

- Alternative housing types

  These can include rental apartments and condominiums, townhouses, townhouse/duplex units embedded in the bases of larger buildings, studios, and live-work units (accommodation that is specifically designed to enable both residential and business use). A mixture of types accommodates various household sizes and configurations, a range of income levels, and diversity of residents.

- Street Right-of-Way Reduction

  To reduce the costs of development (and to increase the available area for housing units), the minimum width of streets and drainage infrastructure can be decreased.

What all of these incentives have in common is that they lower the cost of development for the developer, thus offsetting the cost of building affordable units. Many incentive programs do not allow actions that allow for a lower-quality product to be built, claiming that it defeats the purpose of an inclusionary housing policy. Nevertheless, a number of cities take this approach in making affordable housing work for developers, including Santa Monica CA (parking reductions), Chicago IL (reduced interior finishes), and Chapel Hill NC (expedited review process).

2.4 Providing Direct or Indirect Fiscal Subsidies

A third way that local jurisdictions can encourage certain types of development is via direct or indirect fiscal subsidies. In other words, rather than allowing the developer to build more units (and thus generate more revenue) or avoid some requirements (and thus lower their costs), governments can offset the cost of building affordable housing units by simply reimbursing the cost, through a variety of mechanisms:

- Selected Tax Abatement

  The abatement refers to a reduction or an exemption of local tax (typically property tax) usually for a certain number of years and is based on the number of low-income units. This means that developers who develop in eligible distressed areas can receive property tax abatement, providing significant savings.

- Tax Increment Financing (TIF)

  TIF is a tool to use future gains in taxes to finance the current improvements that will create those gains. Bonds are issued to pay for planned improvements, which in turn encourage private development. Private development raises site value and creates more taxable property, which increases tax revenues (the "tax increment"). This increased revenue is then used to finance the debt issued. TIF is designed to channel funding toward improvements in distressed or underdeveloped areas where development would not otherwise occur.

- Utility hook up or other impact cost grants

  Grants that support post-construction infrastructure needs can be made available to developers for completed affordable housing developments. Utility hook-up fees can run into several thousand dollars per unit, and therefore the grants can have a significant impact on the viability of a project.

- Subsidized development loans

  Below-market loans can be made available to the developer to lower the purchase price of a unit or the rent, ensuring affordable housing.

- Construction or permanent financing loan guarantees

  Loan guarantees, including HUD Section 108, can be provided to developers as a source of financing for affordable housing projects in eligible communities.

- Contributions of land or land price write downs for public land

  This involves the contribution of land to an affordable housing project, or the sale of land at a below-market price to developers of an affordable housing project.

- Grants/loans for site assembly, demolition or other site preparation costs

  Often federal grants administered by the city, these provide funds for the pre-construction costs associated with a development and are open to developers who plan to construct affordable housing and meet the specific requirements.

- Credit enhancement for development financing

  In exchange for setting aside affordable units within the project, local governments can provide credit enhancements to reduce financing costs for developers.

- Tax Increment Set-Aside (TISA) programs

  TIF set-asides for affordable housing are a method of ensuring funding for affordable housing. These programs require local municipalities to spend a minimum percentage of their total tax increment revenue on affordable housing in TIF districts or areas designated as redevelopment areas. Cities such as Portland, Oregon, and Madison, Wisconsin, as well as the State of California, have adopted TIF set-asides to varying degrees. Each area also has differing guidelines on how the funds should be spent.

Since 1976, California law has required that a minimum of 20% of the redevelopment tax increment must be set-aside for "increasing, improving, and preserving the community's supply of low and moderate-income housing".[17] Almost $100,000,000 in TISA funds was expended in the Bay Area alone during FY 1996-97. [18]

The City of Madison requires a set-aside for the development of affordable housing of 10% of the estimated district-wide increment in TIF districts with residential areas. Madison's guidelines for the TIF set-asides include confirmation that if not for the TIF funds the project would not occur; a $25,000 maximum per-unit subsidy in rehab assistance or $45,000 for development of new units (with an additional $5,000 per unit available when necessary for projects to provide for energy conservation or lead paint hazard reduction efforts etc.); and a minimum requirement of 85% of TIF funds to be used for hard costs, such as construction costs, soils/site preparation, landscaping, etc. All TIF set-aside funds must be also be expended within 7 years of the creation of the TIF district. [19]

[17] Note that by structuring fiscal incentives such that they are only available with the construction affordable housing, it is more likely that the incentive will result in additional housing production rather than simply increases in land prices

[18] Bay Area Homeless Alliance website.

[19] City of Madison website.

Portland requires spending of up to 30% of total TIF resources for affordable housing. Portland's Development Commission has also adopted guidelines to ensure that the focus of the TIF set-aside is on implementing two primary City priorities: affordable homeownership in support of families and bridging the minority homeownership gap (Operation HOME), and low-income rental housing for extremely low-income households and formerly homeless individuals and families (the 10-Year Plan to End Homelessness).[20]

Interestingly, there are a number of cases in which municipalities provide no cost offset to go along with their affordable housing requirement, but do step up with funds if a developer is willing to go beyond those minimum requirements and build additional affordable units. Boulder CO, Carlsbad CA, and Newton MA are three cities that take this approach.

20 Portland Development Commission website.

3.0 ILLUSTRATIVE DEVELOPMENT PRO FORMAS

3.1 Basic Development / Investment Decision Making

The key component of the Appellate Division of the Superior Court of New Jersey's recent findings – that municipalities must offer development incentives sufficient to generate a realistic opportunity for developers to produce new affordable housing – potentially expands the role and nature of the New Jersey Council on Affordable Housing's (COAH) review process of plans submitted for substantive certification. To some extent, it may require COAH to either develop a presumptive level of incentives, and/or determine through its regulations whether a municipality's plan of incentives to developers is sufficient to induce affordable housing provision (either be inclusionary or off-site) or at least sufficient to create a "realistic opportunity" for affordable housing to be developed.

Both such tasks are complicated by the wide variation in local markets across the state. In other words, a presumptive level of incentives and/or the sufficiency of a particular package of compensatory benefits might be best judged on a case-by-case basis. Their sufficiency, after all, is dependent on such changing variables as the national and regional real estate market over time, the relative attractiveness and risk of a location compared to other locations, and the existing densities and related regulations for one municipality versus that of another. This must be balanced against the benefit of predictability and certainty that comes with established thresholds.

Thus, it may be impossible to pre-produce pro forma statements that are encompassing of all permutations or that are extremely accurate. Nevertheless, it is possible to pre-produce some illustrative pro forma statements, which can be used to derive some general principles that are applicable to the notion of "sufficiency," and that can also be used to address some of the important sub-topics that were introduced in Section 1.

3.2 The Economics of Incentives

Our analysis in this section, then, can be used by COAH as a benchmark against which municipal plans can be compared, since these illustrative pro forma statements provide some sense of the impact of various incentives on developer returns. Before we can even set up benchmark assumptions, though, we must revisit a couple of theoretical issues that have been introduced previously and that can now be discussed in the context of these illustrative pro forma statements.

Elasticity of Land Supply

As mentioned earlier, the introduction of an affordable housing requirement would tend to lower the cost of land, while the introduction of offsetting incentives would tend to increase the cost of land. These increases and decreases in land acquisition costs would have a direct effect on a developer's estimated profit.

If the status quo has already capitalized the affordable housing requirement into land prices, but it has not yet capitalized the existence of incentives, it is possible that, if land supply is completely inelastic and markets are perfect, the value of the incentive, rather than restoring the developer's original return to the level prior to the affordable housing requirement, will simply lead to the exact increase in land acquisition cost that offsets the incentive. Under such a scenario, no amount of incentives, no matter how great, restores the developer's original return, and therefore no amount of incentives will induce additional provision of affordable housing units.

However, empirically we note that incentives do in fact work to induce development. Nevertheless, while their value may not be fully capitalized into land prices, it is equally true that their value is at least somewhat capitalized into land prices. One might preliminarily calculate what scale of incentives would be required to offset the cost of the affordable housing requirement, but that scale of incentives might not actually achieve the desired level of affordable housing units, because the introduction of that scale of incentives would increase the land acquisition cost, thus changing the numbers in the pro forma statement.

Discarding equally the possibility that incentives are completely capitalized into land prices and the possibility that they are not at all capitalized into land prices, let us temporarily assume that incentives are exactly 50 percent capitalized into land prices. This is the equivalent of saying that rather than whatever level of incentives one might initially calculate to be needed to offset the cost of the affordable housing requirement, the actual level of incentives needs to be double that, to account for the effect on land acquisition costs of the introduction of the incentives.

In reality, it is not clear what percentage of the value of incentives is actually capitalized into land prices. Affordable housing requirements may result in reduced land prices, which in turn reduces the need for incentives; while offsetting incentives may result in increased land prices, which in turn shrinks the impact of those incentives.

Presumptive Density

As will be detailed below, the goal of the upcoming illustrative development pro forma statements is to calculate the amount of incentives needed to offset the cost of the affordable housing requirement. Many of the incentive types are some form of density bonus; in such cases, the pro forma model can estimate the amount density has to increase to restore a developer's profits to their levels before the introduction of the affordable housing requirement.

What the pro forma model does not focus on is the inherent profitability of a project. Thus, the question of whether a certain density level that is being offered can be deemed sufficient for inducing construction can only be determined if the starting density is known.

Nevertheless, regardless of the original density, is there a notion of "presumptive density"? In other words, is there a density that is innately sufficient to induce affordable housing, regardless of what the current density levels are? Again, the pro forma model, in its current form, cannot answer such a question.

However, intuitively, we can conjecture over whether there exists such a density level. Real estate markets are efficient enough that if a location's zoning allows a relatively high density, and demand to live at that location is high enough that all the allowable units will be sold for a profit, then the price of the land may go up accordingly, such that there is no "extra margin" enjoyed by the developer that would thus enable him to accept losing money by building affordable units.

On the other hand, we know that many parts of the country have successfully integrated affordable housing requirements without prohibitively slowing development. These locations are characterized by high demand and/or natural supply limits (most notably, coastlines), such that there is such a premium to build that developers are willing to "pay the cost" of affordable units for the right to build there. In theory, a dense enough zoning could create such a dynamic, and to the extent that the increased value of the location is not totally captured by higher land prices, there could be sufficient incentive to developers from the density by itself to induce construction even in light of affordable housing requirements.

3.3 Pro Forma Model - Approach

Our goal in generating and annotating an illustrative pro forma statement is to determine the effect on developer profitability of first the affordable housing requirement, and then of a variety of types and scales of compensatory benefits. Specifically, we have constructed a pro forma statement that consists of three sheets:

1. The initial pro forma statement, prior to affordable housing requirement and affordable housing incentives;

2. The pro forma statement, after the affordable housing requirement has been accounted for but prior to the introduction of the affordable housing incentives; and

3. The pro forma statement, after both the affordable housing requirement and the affordable housing incentives have been accounted for.

By solving for the various incentive amounts necessary to offset the cost of the affordable housing requirement, we can then compare that scale of incentives with levels that municipalities might choose to offer, to determine if such levels can be considered as sufficient. Specifically, we can calculate the estimated density bonus or construction cost reduction needed, among other incentive packages.

It is important to note that these are merely illustrative examples, intended to provide general guidance on development activities that span a wide diversity of inputs and results, with variations according to geography, market conditions, and other variables. Initial assumptions have been chosen to represent reasonable inputs, but certainly individual cases will have their own characteristics.

While we have built out the model so as to allow for a variety of assumptions, we will initially walk through a base scenario involving a development of 25 houses for sale.[21] We then loaded in reasonable estimates for various revenue and expenditure assumptions.[22]

It is important to note that we load in initial assumptions of land acquisition and demolition at approximately 26 percent of total project costs (which represents the lowest land to project cost ratio among the COAH regions),[23] and infrastructure costs at approximately 5 percent of total project costs.[24] These proportions for acquisition, demolition, and infrastructure are important because a density bonus offsets an affordable

[21] So long as all of the accompanying assumptions are proportionate, these results are independent of the size of the project, and would be identical for a much smaller project or a much larger project.

[22] Key initial assumptions include the following:

- Houses will be 2000 square feet in size.
- Construction costs will be $150 per square foot, inclusive of both hard and soft costs.
- The construction will take 24 months, with the first houses completed and ready for sale halfway through the construction period.
- The houses will sell out over a 12-month period, and thus all houses will have been sold by the completion of the construction period.
- Seventy percent of the project cost will be raised via debt at a 7 percent interest rate, and the other 30 percent is in the form of equity.
- The interest on the debt will be capitalized during the construction period.
- Loan proceeds are drawn down as needed and paid back as houses are sold.
- Inflation will be three percent.
- A development fee of 1 percent will be assessed, but is waived if affordable units are built.

[23] Controlling for the income level of residents and the market price of for-sale units, land cost as a proportion of total project costs is a ratio that tends to hold relatively constant across high-density and low-density locations. The higher the density of a site, the more profitable the development potential for that site, and therefore the higher the land price; but this is offset by the fact that higher-density sites require less land per unit. The same holds true for lower-density sites: land prices are lower, but more land needs to be purchased per unit.

Importantly though, land cost as a proportion of total project costs is not relatively constant as one considers higher-income and higher-priced sites, or conversely lower-income and lower-priced sites. As we discuss later in this section, it is possible for land costs to deviate significantly as a proportion of total project costs, and when they do, such sites require fundamentally different density bonus levels to offset the cost of building affordable units.

[24] Infrastructure costs are relatively constant as a proportion of total project costs, although it is likely that they can move up or down as a proportion of total project costs when comparing high-density versus low-density sites. It is also hard to generalize if infrastructure costs are truly unchanged as units are added, as it is possible that costs could increase if additional systems need to be installed on a per-unit basis, or alternatively that costs could actually decrease if higher densities necessitate less linear feet of roads and thus less road material. Nevertheless, to the extent that this is simply an illustrative pro-forma, we will simply assume that this proportion is fixed for the purposes of this exercise.

housing requirement to the extent that such project costs can be held as fixed while more units are added, thus lowering the cost per unit and thus enabling a developer to incur additional costs while retaining a desired profitability level.[25]

We then set house prices such that the internal rate of return on the initial investment is around 50 percent and the net income of the project is around 10 percent.[26] Based on our initial assumptions, this requires a sale price of $477,120, a price level at which the internal rate of return is exactly 50 percent and the overall net income for the project is 9.3 percent (see Figure 3.1).

With the introduction of an affordable housing requirement, a certain number of affordable units will have to be built, depending on the set-aside ratio. Let us preliminarily assume that the set-aside ratio is 20 percent – i.e. affordable units represent 20 percent of all units, or, put another way, there must be one affordable unit for every four market units. Thus, instead of 25 market units selling for $477,120, the development now (temporarily) consists of 20 market units selling for $477,120 and 5 affordable units selling for much less. Based on COAH's current payment in lieu calculations and assuming a mix of homebuyers that consists of half who are at 40 percent of median income and half who are at 70 percent of median income, we have determined that the affordable price is $89,265.[27]

We can now see the impact of the affordable requirement on the developer's bottom line. Not surprisingly, the replacement of 5 market units with 5 affordable units that sell for significantly less than the market units as well as significantly less than the cost to construct them leads to a significant drop in profitability: a negative internal rate of return, and an overall net loss for the project of 7.8 percent (see Figure 3.2).[28]

[25] To size this project to a typical New Jersey development, we assume the development site is 2 million square feet, or about 46 acres; thus, the initial density for the development is about 0.5 units per acre. Additional assumptions for costs associated with acquisition, demolition, and infrastructure yield acquisition and demolition costs of about $[8] 3 million and infrastructure costs of about $500,000 out of a $11 million project cost.

[26] These levels represent a starting point in the pro forma model: affordable housing requirements then lower returns, and the exercise at hand is to determine the amount of incentives required to return to those original levels. Importantly, if these starting levels are set to be higher or lower, the ensuing results do not materially change; in other words, the assumed baseline profitability and return levels do not alter the amount of incentives needed to offset the affordable housing requirement.

[27] This figure represents an average across all COAH regions.

[28] Bear in mind that, in addition to the introduction of the affordable housing requirement, a second difference in the second sheet is the removal of development fees.

Figure 3.1 – Illustrative Pro Forma, Step 1: Prior to Affordable Housing Requirement and Affordable Housing Incentives

Use Type	Residential Market Sale	Residential Affordable Sale	Upfront Exp Land Acq/Demo	Upfront Exp Infrastructure	Total Development
Sale Price/Unit	$ 477,120				
# Units	25		2,000,000	2,000,000	
SF/unit	2,000		1	1	
Total SF	50,000		2,000,000	2,000,000	
Constr$/SF	$ 150		$ 1.42	$ 0.25	
Sellout Begins in Mo#	13				
Sell-out Pd (Months)	12				
Constr Pd (Months)	24				
Debt / Total	70%				
Debt Interest Rate	7%				
Discount Rate	3%				
Devt Fee (0% if AH)	1%				
Upfront Revenues	$ 11,928,001				$ 11,928,001
Upfront Expenses	$ (7,575,000)		$ (2,839,121)	$ (500,000)	$ (10,914,121)

# acres	46
units/acre	0.5
land/cost	26%
infrastructure/cost	5%
net income	9.3%
IRR	50.0%

COAH Region	AH = X% Med Inc
Blended	55%

COAH Region	1	2	3	4	5	6	Blended
Affordable Sale Price	$87,065	$95,808	$110,921	$93,710	$79,784	$68,304	$89,265

Source: Econsult Corporation (2008)

Figure 3.2 – Illustrative Pro Forma, Step 2: Accounting for Affordable Housing Requirement But Not Yet for Offsetting Incentives

Use Type	Residential Market Sale	Residential Affordable Sale	Upfront Exp Land Acq/Demo	Upfront Exp Infrastructure	Total Development
Sale Price/Unit	$ 477,120	$ 89,265	[redacted]	[redacted]	[redacted]
# Units	20	5	2,000,000	2,000,000	[redacted]
SF/unit	2,000	2,000	1	1	[redacted]
Total SF	40,000	10,000	2,000,000	2,000,000	[redacted]
Constr$/SF	$ 150	$ 150	$ 1.42	$ 0.25	[redacted]
Sellout Begins in Mo#	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Sell-out Pd (Months)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Constr Pd (Months)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Debt / Total	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Debt Interest Rate	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Discount Rate	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Devt Fee (0% if AH)	0%	0%	[redacted]	[redacted]	[redacted]
Upfront Revenues	$ 9,542,401	$ 446,327	[redacted]	[redacted]	$ 9,988,728
Upfront Expenses	$ (6,000,000)	$ (1,500,000)	$ (2,839,121)	$ (500,000)	$ (10,839,121)

# acres	46
units/acre	0.5
land/cost	26%
infrastructure/cost	5%
net income	-7.8%
IRR	#NUM!

Step 1 to Step 2 -

Zero out devt fee	0%
AH set-aside ratio	20%
Resulting market units	20
Resulting affordable units	5

Source: Econsult Corporation (2008)

3.4 Illustrative Results

Now we can introduce compensatory incentives, and specifically we can determine the scale of incentives that are needed to offset the effect of the introduction of the affordable housing requirement. In other words, we can calculate the amount of incentives that would have to be added in our illustrative example for the internal rate of return to return to 50 percent.

Importantly, we make one key assumption prior to this calculation. Previously, we had not assumed that there would be any difference between the market units and the affordable units. In reality, affordable units almost always differ from market units, if not in the quality of the materials allowed to be used (thus leading to a reduction in the construction cost per square foot) then in the size of the structures (thus leading to a reduction in the square foot per unit). In fact, according to the extensive literature and best practices review conducted by Applegate and Thorne-Thomsen, the most common sizing of affordable units is two units on the same footprint as one market unit (see Figure 3.3).

Figure 3.3 – Illustrative Sizing of Affordable Units vs. Market Units (Fairfax County, Virginia)
(L) Two Affordable Town Homes, (R) One Market-Rate Single-Family Home

Source: Applegate and Thorne-Thomsen (2007)

Based on this scale of sizing, affordable units would be substantially less costly to produce than market units. The cost would not be cut in half, because there are certain fixed costs per unit, such as kitchens and heating/cooling systems, that do not decrease even given much smaller footprints. We estimate that the cost savings per unit is on the order of 40 percent, assuming that footprints are cut exactly in half and that fixed costs represent 20 percent of the cost of constructing a house (see Figure 3.4).

Figure 3.4 – Illustrative Cost Savings on Affordable Units if Built at Two Units Per Lot vs, One Unit Per Lot

	# units / lot	SF / unit	fixed cost per unit	variable cost per SF	total cost for lot	total cost/unit
market	1	2000	$60,000	$120	$300,000	$300,000
affordable	2	1000	$60,000	$120	$360,000	$180,000
cost savings per unit						40%

Source: Econsult Corporation (2007)

The Applegate and Thorne-Thomsen report affirms the primacy of density bonuses as the incentive type of choice for municipalities, although it also finds that most programs offer more than one incentive type to induce the construction of affordable housing. Accordingly, we solve for multiple incentive packages, to offer guidance on the various ways municipalities can offer offsetting incentives:

- What is the density bonus needed to offset the affordable housing requirement? In other words, how many more units do municipalities need to allow developers to build to offset the cost of building affordable units and selling them below cost?
- What is the construction cost reduction needed to offset the affordable housing requirement? In other words, how much do municipalities have to relax construction-related requirements (parking minimums, mandated materials, et al)?
- What is the construction cost reduction needed to offset the affordable housing requirement, given a "one for one" density bonus? In other words, after offering a 20 percent density bonus,[29] how much additional incentives in the form of construction cost reductions must be offered?

[29] A 20 percent density bonus is modeled here because a 20 percent set-aside ratio is assumed, and thus this level of incentive represents a "one for one" density bonus: one additional unit for every initially required affordable unit. For the purposes of this illustrative scenario, we assume that all additional units are market units. Thus, a 20 percent density bonus defined in this way would mean that the project would go from 100 market units (Step 1) to 80 market units and 20 affordable units (Step 2) to 100 market units and 20 affordable units (Step 3), or one bonus market units for every affordable unit required.

- What is the upfront or ongoing cash subsidy needed to offset the affordable housing requirement? In other words, how much to municipalities have to give back to developers upfront (for example, in the form of infrastructure investments) or ongoing (for example, in the form of tax credits)?

Based on these assumptions and scenarios, we can determine the scale of incentives required to compensate for the affordable housing requirement. For example, assuming a “one for one” density bonus, we find that a 4.5 percent construction cost reduction on all units is needed if all additional units are market units, or 7.0 to 7.8 percent if additional affordable units are built such that the original ratio of affordable units to market units is retained. Alternatively, a straight density bonus would have to be in the neighborhood of 28 to 32 percent if all additional units are market units, and 39 to 49 percent if the set-aside ratio is retained (see Figure 3.5 and Figure 3.6).[30]

Figure 3.5 – Illustrative Pro Forma Results: Incentive Levels Needed to Offset the Cost of Building One Affordable Unit for Every Four Market Units (Affordability Defined as Affordable to Someone Making 55 Percent of Median Household Income)

ASSUMING 20% SET-ASIDE RATIO	HIGH LAND COST AREA (land = 37% of project costs)		LOW LAND COST AREA (land = 26% of project costs)	
	If all DB units are market	If set-aside ratio retained	If all DB units are market	If set-aside ratio retained
1. Density bonus %	27.9%	39.4%	32.2%	49.1%
2a. Construction cost reduction required	19.3%		14.3%	
2b. Construction cost reduction, assuming 20% DB	4.5%	7.8%	4.5%	7.0%
3a. $000 cash subsidy per affordable unit (ongoing, annual)	$73.5		$54.9	
3b. $000 cash subsidy per affordable unit (one-time, upfront)	$216.9		$161.8	

Source: Econsult Corporation (2008)

[30] Again, this illustrative pro forma model assumes land costs are 26 percent of total project costs, the lowest land to project cost ratio among COAH regions. See Exhibit A for pro forma results modeled at 37 percent of total projects, the highest land to project cost ratio among COAH regions. Results for these two land cost to project cost ratios are shown simply to demonstrate the relative differences in offsetting incentives needed; there are certainly instances across municipalities and even across projects within a municipality in which such ratios can vary quite significantly.

Figure 3.6 – Illustrative Pro Forma, Step 3: Density Bonus Needed, Assuming Set-Aside Ratio Is Retained

Use Type	Residential Market Sale	Residential Affordable Sale	Upfront Exp Land Acq/Demo	Upfront Exp Infrastructure	Total Development
Sale Price/Unit	$ 477,120	$ 89,265	[redacted]	[redacted]	[redacted]
# Units	30	7	2,000,000	2,000,000	[redacted]
SF/unit	2,000	1,000	1	1	[redacted]
Total SF	59,635	7,454	2,000,000	2,000,000	[redacted]
Constr$/SF	$ 150	$ 180	$ 1.42	$ 0.25	[redacted]
Sellout Begins in Mo#	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Sell-out Pd (Months)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Constr Pd (Months)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Debt / Total	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Debt Interest Rate	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Discount Rate	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Devt Fee (0% if AH)	0%	0%	[redacted]	[redacted]	[redacted]
Upfront Revenues	$ 14,226,472	$ 665,415	[redacted]	[redacted]	$ 14,891,887
Upfront Expenses	$ (8,945,216)	$ (1,341,782)	$ (2,839,121)	$ (500,000)	$ (13,626,119)

# acres	46
units/acre	0.8
land/cost	21%
infrastructure/cost	4%
net income	9.3%
IRR	50.0%

Step 2 to Step 3 -

AH SF Reduction	50%	[AH units can be smaller]
AH Cost Reduction	40%	[Cost reduc < SF reduc]
Density Bonus	49%	[Either set or solve for]
DB Units all Market?	N	[N = retain set-aside %]

	If all DB units market	If set-aside ratio retained
Final market units	32	30
Final affordable units	5	7
Addn constr cost reduc	0.0%	0.0%

Source: Econsult Corporation (2008)

3.5 Lessons Learned

National and Local Context

It is important to remember that the results above are derived from an illustrative pro-forma analysis. Individual municipalities, and individual projects within them, may in fact have very different revenue and expense estimates associated with them. Furthermore, at a statewide level, policy decisions such as the setting of the set-aside ratio and the affordability level will play a role in the incentive levels needed to offset the affordable requirement: the higher the set-aside ratio and/or the deeper the affordability, the more incentives that will be needed.

In placing these incentive levels within a broader, national context, it is important to keep the following considerations in mind:

- First, our illustrative examples calculate what is necessary to completely offset the cost of the affordable housing requirement; certainly, in the marketplace, there are situations in which an incentive does not need to completely offset the cost of the affordable housing requirement for it to be effective in inducing developers to build. Developers may, for example, choose to accept lower margins, and/or find ways to reduce construction costs on their own or through their sub-contractors such that the cost of the affordable requirement is absorbed without adversely affecting profitability. The marketplace may also provide a boost, as noted before, in that the existence of an affordable housing requirement may cause land prices to fall, helping the numbers work for developers.

- Second, these illustrative examples utilize two very aggressive assumptions related to the provision of affordable housing. For one, providing one affordable unit for every four market units that are built is a very high proportion of affordable units. Furthermore, making affordable units such that someone at 55 percent of median income can afford them is a very deep level of affordability. These are policy choices that can be made, but it must be stated that requiring more affordable units and/or requiring that those units are more deeply affordable necessarily means higher levels of incentives are needed to offset the associated costs.

- Third, in fact many government entities that have instituted affordable housing requirements are located in extremely attractive real estate markets, and thus developers are often so motivated to build there that they are willing to bear the additional cost of the affordable housing requirement with zero incentives, density-related or otherwise. In such cases, not only do incentives not need to fully offset the additional cost of the affordable housing requirement, they do not need to be offered at all.

- Fourth, many affordable housing requirement programs encourage the mixing of incentive types. Thus, while density bonuses alone might require fairly high density increases, density bonuses in conjunction with construction cost reductions require more reasonable density increases. On a related note, for municipalities who are constrained in offering density bonuses by environmental regulations, state or regional planning mandates, or other restrictions, other offsetting incentives besides density bonuses will thus have to be considered and offered.

Of course, municipalities need not limit themselves to the minimum affordable housing requirements. For example, a municipality could offer a certain level of density bonus or construction cost reduction to offset the cost of the affordable housing requirement, and in parallel offer a deeper level of density bonus or construction cost reduction in exchange for more affordable units than are required, or alternatively for the required number of units sold at a more affordable price, either of which might earn them additional credit towards their affordable housing requirement. A municipality might be motivated to go beyond minimum affordable housing requirements if COAH gives additional credit for doing so, and thus understanding the scale of incentives required to offset requirements at different set-aside ratios and affordability levels provides some guidance to such trade-offs.

Variation Across Municipalities

Importantly, the results above assume that land costs represent 26 percent of total project costs, which represents the lowest land to project cost ratio among the COAH regions. The higher land costs are as a percentage of total project costs, the lower the density bonus that is required, since the mechanism by which additional market units offset the cost of building affordable units is by allowing the developer to spread the project's fixed costs (i.e. land costs) over more units. Thus, higher fixed costs as a percentage of total project costs mean that there is a lot to be gained back by the developer in spreading out those higher fixed costs over additional market units. Conversely, if fixed costs are a relatively small percentage of total project costs, the developer does not gain much back by adding additional market units.

In fact, while land costs tend to adjust in response to the attractiveness of the land (in terms of what prices the market is willing to pay for such a location), construction costs are far more homogenous across real estate markets. Consider, for example, our base case as compared to developments in two other municipalities, one that is very low-income and one that is very high-income.[31] In a municipality that is very low-income, land costs will be far lower, while total project costs will not move as drastically, to the extent that construction costs are relatively equal. The opposite is true in a municipality that is very high-income: land costs will be far higher, while total project costs will not move as drastically.

Higher density bonuses are needed in lower-income areas, while lower density bonuses are needed in higher-income areas. This reconciles with national findings: in many cases, higher-income areas can institute affordable requirements with little or no offset density bonus, while lower-income areas often struggle to enable the construction of market units, and thus imposing an affordable requirement would require high levels of offsetting incentives to induce development.

[31] Alternatively, one could compare a municipality with itself: the municipality at one point in time, versus a different point in time after it had experienced material changes in density and/or income levels.

Presumptive Densities

Returning to the notion of presumptive densities, it is clear that the effectiveness of an incentive in offsetting the cost of the affordable housing requirement depends more on the change in density levels rather than on the density level itself. Said another way, the pro forma model, as currently constructed, does not focus on the inherent profitability of a project but rather on how an affordable housing requirement and then offsetting compensatory benefits affect that profitability. Thus, the question of whether a certain density level can be deemed sufficient for inducing construction can only be determined if the starting density is known, and so the pro forma model can only touch on the notion of presumptive densities, not answer it directly.

New Construction Versus Rehabilitation

The question of new construction versus rehabilitation, from the lens of the pro forma model, is a question of acquisition and construction costs. To the extent that all other variables are held equal, but a rehabilitation project is swapped in for a new construction project, the difference in profitability will be a function of the amount that the acquisition and construction costs differ.

This, too, is a comparison that can only be made on a case-by-case basis, and cannot easily be generalized, since acquisition and construction costs for rehabilitation projects vary widely depending on the existing value of the property and the depth of renovation that is needed. One additional and interesting wrinkle to this discussion is the vast number of existing incentive programs within the state that are in place to induce developers to choose existing sites and buildings for development rather than building anew in “greenfields.” The existence of these incentives can, in many cases, not only narrow the usual difference in cost between new construction and rehabilitation but also, in some cases, make rehabilitation less costly, even factoring in the not uncommon presence of site remediation.

4.0 RECOMMENDATIONS FOR REGULATORY LANGUAGE

This report has been concerned primarily with providing guidance to the New Jersey Council on Affordable Housing (COAH) in determining what constitutes a "sufficient" set of incentives offered by a municipality to achieve its fair share of affordable housing requirements, as per the ruling of the Appellate Division of the Superior Court of New Jersey. To address this main topic, we have provided an inventory of incentive mechanisms (Section 2) and walked through an illustrative pro forma statement to understand the relative impact of various incentives under various scenarios (Section 3).

4.1 Sufficiency of Incentives

Having covered this terrain, we can now offer direct guidance on the notion of "sufficiency," and on related sub-topics that were first surfaced in Section 1. The advantage of a "presumptive density" lies in its simplicity, predictability, and record of success in producing affordable housing. Raw density levels are easy to determine, while changes in density levels require a more complicated calculation involving the weighting of various density levels in different parts of the municipality, in order to determine existing density levels.

Nevertheless, as has been covered previously, real estate markets are such that there may not be a density level that is necessarily sufficient to offset the cost of the affordable housing requirement. The presumptive density level, in other words, depends on a number of variables, most notably the existing density of the municipality, since it is the change in density and not the density level itself that is important.

As discussed previously, in practice many incentive programs around the nation have tended to combine density bonuses with other incentives, such as relaxation of various regulations that tend to lower construction costs. Most commonly, affordable units are allowed to be different in size and/or quality than market units, drastically lowering the cost of constructing them and thus reducing the amount of incentives needed to offset the loss to the developer in providing them. Therefore, in our analysis we make an important assumption that affordable units are half the size of market units, resulting in a construction cost reduction of approximately 40 percent per affordable unit.

Given that assumption, we find that the amount of incentives required to offset the affordable housing requirement depends on a number of statewide policy decisions, most notably the set-aside ratio, the affordability level, and the definition of a density bonus as allowing all additional units to be market versus as requiring that additional units retain the set-aside ratio. Again, these are policy choices that affect the scale of the cost of building affordable units and also of the effectiveness of different levels of offsetting incentives.

Importantly, the amount of incentives required to offset the affordable housing requirement also depends on the proportion that land and other fixed costs contribute to a typical project's total costs, to the extent that density bonuses work to offset the cost of building affordable units by spreading a project's fixed costs over more units. In particular, in extremely high-income municipalities, land costs can become a very high proportion of total project costs, thus necessitating relatively smaller density bonuses to offset; while in extremely low-income municipalities, land costs can become a very low proportion of total project costs, thus necessitating relatively higher density bonuses to offset.

In modeling an illustrative pro forma, we assume the lower-income, low land area scenario, which yields a higher density bonus needed to offset the affordable housing requirement: 35.9 percent if all bonus units are market units, or 58.0 percent if additional affordable units are built such that the original ratio of affordable units to market units is retained. Our illustrative scenarios thus use lower-income areas to determine what could be deemed a presumptive density increase that municipalities can offer to automatically obtain COAH certification. Certainly, though a higher-income area that offers a lower density increase would not receive automatic certification, its plan would likely be well received by COAH.

Finally, it is important to note that this analysis has concerned itself with the sufficiency of incentives. National and local experience suggests that incentives do not need to be sufficient to be effective. In other words, this analysis calculates the level at which an incentive completely offsets the affordable housing requirement; but a developer might be sufficiently motivated to build at incentive levels that are far lower, or in some cases with no offsetting incentive offered at all.

In short, this analysis is intended to offer guidance in framing regulatory language and in setting policy, by offering illustrative calculations that provide a framework for making such decisions. In its most recent ruling, the Court made it clear that municipalities must provide a "realistic opportunity" for affordable units to be developed, and it connected that responsibility with the concept of "sufficient" incentives. Thus, the above illustrative pro-forma statements offer some guidance for COAH to evaluate plans put forth by municipalities to that end.

4.2 Municipality Types

There can be a difficulty in setting a statewide rule in a state as diverse in its housing markets as New Jersey. Certainly, there is a wide variation in starting densities across the state, as well as in the relative attractiveness of the housing market, in terms of the usefulness of a certain scale of density bonus.

A simple yet useful way to get at this variation is to compare a municipality's median house prices with equivalent construction costs. In other words, determining how much more or less a house sells for in relation to how much it costs to build is an important indicator of the attractiveness of a municipality's housing market, relative to other municipalities.[32]

Efficient real estate markets mean that where house prices are high, land will be relatively expensive, and where house prices are low, land will be relatively cheap. To the extent that there is wide variation between municipalities in terms of the ratio between median prices and construction costs, this has implications for what constitutes a sufficient density bonus.

Since construction costs do not vary nearly as much across the state as median house prices, higher-income municipalities will have price/cost ratios far greater than 1.0, while lower-income municipalities will have price/cost ratios less than 1.0. This simply constructed index thus offers some guidance in terms of classifying municipalities, so that a particular municipality's incentive plan can be evaluated based on whether it is a higher-income municipality (and thus does not need to offer as high of a density bonus) or a lower-income municipality (and thus needs to offer a higher density bonus).

4.3 Non-Residential Construction

Heretofore, we have discussed the application of incentives related to residential construction. However, non-residential construction also generates an affordable housing obligation, which poses a challenge to the extent that housing units cannot always be included at the same site, and non-residential developers may not have the expertise or desire to build residential units. Non-residential developers have heretofore then paid a development fee instead of directly bearing the cost of building affordable units. Would municipalities need to offer incentives to such developers? Density bonuses, the usual mechanism, could apply here in the form of increased floor area ratios (FAR), and regulatory changes could reduce costs or increase value of construction and thereby encourage development, as could financial subsidies.

However, such an analysis would have to be preceded by the resolution of a fundamental policy question concerning the need to offer incentives at all. The absence of incentives, after all, would simply mean a higher cost of locating a non-residential use within the state. This could possibly mean the loss of business, on the margins, as developers choose to site their non-residential developments outside state lines or not build them altogether. The alternative of offering incentives is equivalent to spreading the cost across all taxpayers. Thus, it is a matter of policy preference first, whether the state seeks to offer incentives for non-residential construction or not.

To use some specific numbers, there is currently a 2 percent development fee levied on non-residential construction that does not build its own affordable housing. Given that construction costs and employment

[32] See Exhibit B for a description of a price/cost index methodology and for results of these calculations at the COAH Region level.

densities vary by building type, the actual cost of building an affordable unit ranges from 2.8 percent to 10.1 percent of the assessed value of non-residential construction (see Figure 4.1).[33]

[33] These estimates make the following assumptions:

- Construction costs are based on estimates obtained from RS Means' free online cost estimator.
- Project costs are assumed to be 50 percent of market value, while assessed value is equal to market value in New Jersey.
- Employment density uses figures determined by building type for employees per 1000 gross square feet from other recent work performed for COAH by Econsult Corporation.
- We assume a revised ratio of one affordable unit required for every 16 jobs created.
- Our subsidy per affordable unit is calculated as follows: 2000 square feet per unit, times $150 construction cost per square foot, minus 40% cost savings by halving the size of the affordable units, plus+ land costs at 20 percent of total project costs, minus $89,265 (affordable price for 55 percent of median income).

Figure 4.1 – Cost of Affordable Housing as a Function of Non-Residential Construction

Building Type	Office	Retail	Factory	Storage	Manuf	Theater	Restaurant	Library	Arena	Stadium	K-12	Hospital	Hotel
Sample # SF in Project	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Average $ Constr Cost/SF	$ 112.5	$ 157.6	$ 94.8	$ 84.8	$ 159.4	$ 151.7	$ 127.3	$ 134.6	$ 131.3	$ 154.3	$ 152.2	$ 306.5	$ 233.7
Total Sample Project Cost	$ 11,252,510	$ 15,761,960	$ 9,477,960	$ 8,479,500	$ 15,944,850	$ 15,170,530	$ 12,727,920	$ 13,459,900	$ 13,131,620	$ 15,434,000	$ 15,218,920	$ 30,648,190	$ 23,367,170
Approx. Project Cost / Market Value	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Assessed Value / Market Value	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Sample Project Assessed Value	$ 22,505,020	$ 31,523,920	$ 18,955,920	$ 16,959,000	$ 31,889,700	$ 30,341,060	$ 25,455,840	$ 26,919,800	$ 26,263,240	$ 30,868,000	$ 30,437,840	$ 61,296,380	$ 46,734,340
Task 4 Jobs/1000 Gross SF	2.6	1.6	1.1	1.3	1.4	1.5	2.9	1.5	3.1	2.3	1.6	2.3	1.6
Jobs Created by Project	259.4	156.4	111.7	134.7	143.4	146.4	293.3	147.3	312.8	234.6	156.4	234.6	156.4
Jobs Per Affordable Unit	16	16	16	16	16	16	16	16	16	16	16	16	16
# Affordable Units to be Built	16.2	9.8	7.0	8.4	9.0	9.2	18.3	9.2	19.6	14.7	9.8	14.7	9.8
$ Cost Per Affordable Unit	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735	$ 135,735
$ Cost for All Affordable Units	$ 2,200,397	$ 1,326,806	$ 947,719	$ 1,142,528	$ 1,216,239	$ 1,242,106	$ 2,487,762	$ 1,249,636	$ 2,653,613	$ 1,990,210	$ 1,326,806	$ 1,990,210	$ 1,326,806
$ Cost as a % of Assessed Value	9.8%	4.2%	5.0%	6.7%	3.8%	4.1%	9.8%	4.6%	10.1%	6.4%	4.4%	3.2%	2.8%

Source: Econsult Corporation (2007)

4.4 Payments in Lieu

Before the Court issued its opinion, COAH proposed revised regulations for payments in lieu, with the intention of addressing the main objection raised about the existing regulations. The objective of these new proposed regulations is to estimate the amount of subsidy needed in each COAH Region to produce an affordable housing unit to establish a basis for the required payments. As with development fees on non-residential construction, as a matter of policy, in cases where affordable units are not being directly built, but rather a payment in lieu is being made, no offsetting incentives would be provided.

We think these proposed regulations reasonably estimate the cost of providing affordable housing. However, the proposed formula assumes that construction costs do not vary across regions, although it does incorporate varying land costs and household income levels (see Figure 4.2).

Figure 4.2 – Current COAH "Payment in Lieu of" Amounts

COAH Region	1st Quartile	Land Costs	Constr Costs	Soft Costs	Total Cost	AH Price	Req Subsidy
1	$330,000	$82,500	$155,433	$19,035	$256,968	$87,065	$169,903
2	$255,000	$63,750	$155,433	$17,535	$236,718	$95,808	$140,910
3	$381,966	$95,492	$155,433	$20,074	$270,998	$110,921	$160,077
4	$343,725	$85,931	$155,433	$19,309	$260,673	$93,710	$166,963
5	$257,790	$64,448	$155,433	$17,590	$237,471	$79,784	$157,687
6	$264,690	$66,173	$155,433	$17,728	$239,334	$68,304	$171,030
Blended	$305,529	$76,382	$155,433	$18,545	$250,360	$89,265	$161,095

Source: New Jersey Council on Affordable Housing (2007)

COAH's current "Payment in Lieu of" calculations assume uniform construction costs across COAH Regions. Construction costs are certainly more uniform across the state than house prices, due to the common drivers that affect such costs regardless of location. Nevertheless, such costs are not totally uniform, to the extent that there are minor differences in the cost of labor and materials in different parts of the state.

Using publicly available data from RS Means, we can determine these variations across municipalities, and then aggregate them to a COAH Region level.[34] Specifically, we take COAH's original $155,433 construction cost across all COAH Regions and adjust upward or downward, depending on the relationship of the weighted average of all municipalities within a given COAH Region to the statewide average. Adding back other costs and then subtracting the affordable housing price gets us the new required subsidy per unit by COAH Region, which as the table below demonstrates, is anywhere from 9 percent lower to 7 percent higher than the original figures (see Figure 4.3). We recommend that COAH adopt these figures in its proposed regulatory language to account for these construction costs differentials across geography.

[34] We use the same data as described and depicted in Exhibit B.

Figure 4.3 – Adjusted Affordable Housing Subsidy Amounts

COAH Region	1st Quartile	Land Costs	% of NJ Avg	Constr Costs	Soft Costs	Total Cost	AH Price	Req Subsidy	% of Previous
1	$330,000	$82,500	107%	$165,798	$19,035	$267,332	$87,065	$180,267	106%
2	$255,000	$63,750	105%	$163,206	$17,535	$244,491	$95,808	$148,683	106%
3	$381,966	$95,492	91%	$141,258	$20,074	$256,824	$110,921	$145,903	91%
4	$343,725	$85,931	91%	$140,697	$19,309	$245,937	$93,710	$152,227	91%
5	$257,790	$64,448	98%	$152,835	$17,590	$234,873	$79,784	$155,089	98%
6	$264,690	$66,173	108%	$167,262	$17,728	$251,163	$68,304	$182,859	107%
Blended	$305,529	$76,382	100%	$155,433	$18,545	$250,360	$89,265	$161,095	100%

Source: Econsult Corporation (2007)

EXHIBIT A - PRO FORMA RESULTS (HIGH LAND COST SCENARIO)

STEP 1 - INITIAL PRO-FORMA, PRIOR TO AFFORDABLE HOUSING REQUIREMENT AND AFFORDABLE HOUSING INCENTIVES

Use Type		Residential Market Sale	Residential Affordable Sale	Upfront Exp Land Acq/Demo	Upfront Exp Infrastructure	Total Development
Sale Price/Unit	$	559,022				
# Units		25		2,000,000	2,000,000	
SF/unit		2,000		1	1	
Total SF		50,000		2,000,000	2,000,000	
Constr$/SF	$	150		$ 2.36	$ 0.25	
Sellout Begins in Mo#		13				
Sell-out Pd (Months)		12				
Constr Pd (Months)		24				
Debt / Total		70%				
Debt Interest Rate		7%				
Discount Rate		3%				
Devt Fee (0% if AH)		1%				
Upfront Revenues	$	13,975,552				$ 13,975,552
Upfront Expenses	$	(7,575,000)		$ (4,712,630)	$ (500,000)	$ (12,787,630)

# acres	46
units/acre	0.5
land/cost	37%
infrastructure/cost	4%
net income	9.3%
IRR	50.0%

COAH Region	AH = X% Med Inc
Blended	55%

COAH Region	1	2	3	4	5	6	Blended
Affordable Sale Price	$87,065	$95,808	$110,921	$93,710	$79,784	$68,304	$89,265

Source: Econsult Corporation (2008)

STEP 2 - PRO-FORMA, ACCOUNTING FOR AFFORDABLE HOUSING REQUIREMENT BUT NOT YET FOR OFFSETTING INCENTIVES

Use Type	Residential Market Sale	Residential Affordable Sale	Upfront Exp Land Acq/Demo	Upfront Exp Infrastructure	Total Development
Sale Price/Unit	$ 559,022	$ 89,265	[redacted]	[redacted]	[redacted]
# Units	20	5	2,000,000	2,000,000	[redacted]
SF/unit	2,000	2,000	1	1	[redacted]
Total SF	40,000	10,000	2,000,000	2,000,000	[redacted]
Constr$/SF	$ 150	$ 150	$ 2.36	$ 0.25	[redacted]
Sellout Begins in Mo#	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Sell-out Pd (Months)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Constr Pd (Months)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Debt / Total	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Debt Interest Rate	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Discount Rate	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Devt Fee (0% if AH)	0%	0%	[redacted]	[redacted]	[redacted]
Upfront Revenues	$ 11,180,442	$ 446,327	[redacted]	[redacted]	$ 11,626,768
Upfront Expenses	$ (6,000,000)	$ (1,500,000)	$ (4,712,630)	$ (500,000)	$ (12,712,630)

# acres	46
units/acre	0.5
land/cost	37%
infrastructure/cost	4%
net income	-8.5%
IRR	#DIV/0!

Step 1 to Step 2 -

Zero out devt fee	0%
AH set-aside ratio	20%
Resulting market units	20
Resulting affordable units	5

Source: Econsult Corporation (2008)

STEP 3 - PRO-FORMA, ACCOUNTING FOR AFFORDABLE HOUSING REQUIREMENT AND FOR OFFSETTING INCENTIVES

Use Type	Residential Market Sale	Residential Affordable Sale	Upfront Exp Land Acq/Demo	Upfront Exp Infrastructure	Total Development
Sale Price/Unit	$ 559,022	$ 89,265			
# Units	28	7	2,000,000	2,000,000	
SF/unit	2,000	1,000	1	1	
Total SF	55,772	6,971	2,000,000	2,000,000	
Constr$/SF	$ 150	$ 180	$ 2.36	$ 0.25	
Sellout Begins in Mo#					
Sell-out Pd (Months)					
Constr Pd (Months)					
Debt / Total					
Debt Interest Rate					
Discount Rate					
Devt Fee (0% if AH)	0%	0%			
Upfront Revenues	$ 15,588,864	$ 622,312			$ 16,211,176
Upfront Expenses	$ (8,365,786)	$ (1,254,868)	$ (4,712,630)	$ (500,000)	$ (14,833,284)

# acres	46
units/acre	0.8
land/cost	32%
infrastructure/cost	3%
net income	9.3%
IRR	50.0%

Step 2 to Step 3 -

AH SF Reduction	50%	[AH units can be smaller]
AH Cost Reduction	40%	[Cost reduc < SF reduc]
Density Bonus	39%	[Either set or solve for]
DB Units all Market?	N	[N = retain set-aside %]

	If all DB units market	If set-aside ratio retained
Final market units	30	28
Final affordable units	5	7
Addn constr cost reduc	0.0%	0.0%

Source: Econsult Corporation (2008)

EXHIBIT B – PRICE/COST INDEX METHODOLOGY AND RESULTS

The supply of housing in a municipality, whether affordable or market rate, is a function of the risk-adjusted returns relative to other possible investments. In this Exhibit, we seek to categorize municipalities according to their relative attractiveness to developers, based on the relationship between house prices and construction costs. In this way, we can attempt to quantify the variations across COAH Regions related to affordable housing provision.

Perhaps the most significant indicator of the strength of a municipality's residential real estate market is the relationship between market prices and construction costs. In the simplest terms, if housing prices exceed construction costs, then new housing units might be produced, while if prices are less than costs, definitely no new supply will be built.[35]

If we can estimate construction costs by municipality, we can compare each to the local housing prices. Therefore, we look at costs and prices per SF of constant quality units.

1) Look at market prices for all houses instead of new ones

2) Normalize house prices by median number of bedrooms based on census info

3) Use the free apartment construction index from RS Means for an x bedroom apartment[36]

On the price side, we divide out by number of rooms, which is available via US Census data; and on the cost side, we look up the construction cost for apartments. This is a relatively approximate method, in that it does not compare like products across municipalities, since age and size of housing stock varies from municipality to municipality. Nevertheless, this approach does get at degrees of unattractiveness reasonably well, by giving an indication of how far from construction costs the average market price is. These results can be determined at a municipal, county, or COAH Region level (see Figure B.1).

[35] If we consider land value as a residual, then housing prices would have to exceed construction costs by at least the value of the next best use (opportunity cost) of the land. Note that one "use" of the land is to hold it speculatively in anticipation of higher future prices.

[36] RS Means gives a low, medium, and high estimates; we have chosen to display separate results for low and medium.

Figure B.1 – Price/Cost Index Results, by COAH Region

COAH REGION	County Price/Cost Ratio-Low Const.Cost	Price/Cost Ratio- Medium Const. Cost
1	2.53	2.26
2	2.50	2.25
3	1.91	1.72
4	1.91	1.72
5	0.90	0.81
6	1.61	1.45

Source: Econsult Corporation (2007)

There are other, more complex ways to approach this comparison, but at this stage we are merely interested in an easily computable index that uses free and public data. In fact, this simple index has the nice benefit of being easy to understand, in that any number below 1.00 signifies that market prices are below construction costs, and any number above 1.00 signifies that market prices are above construction costs.[37]

[37] We note that communities with low priced homes and no new homes will fall at the bottom, and communities with higher priced old homes and significant numbers of new homes will fall near the top. We are only interested in the ordering. We group communities as high, median and low prices relative to construction costs. This provides an indication of which communities are unlikely to see development--especially with added burdens.

We also note that problems arise when one tries to compare construction costs (new houses) with sales prices (varying degrees of house age, with some municipalities having generally older stock than others). Also, we are not able to compare on a per SF basis, because that data is not always available. On the cost side, RS Means' online calculator is not free for residential construction aside from apartments.

Finally, there is a danger in putting too much weight into these specific numbers, to the extent that they represent data from one point in time, a time that happens to be experiencing greater than normal volatility on both the price and cost side: prices have soared and are now declining, while construction costs have increased faster than historical growth rates.

Despite these shortcomings, this simple index achieves what we are seeking, namely a reasonable approximation of the relative degree of attractiveness to build, from municipality to municipality.

NEW JERSEY COUNCIL ON AFFORDABLE HOUSING
TASK 4 – COUNTING JOBS AT THE LOCAL LEVEL

Final Report Submitted To:
New Jersey Council on Affordable Housing
101 South Broad Street
Trenton NJ 08625

Final Report Submitted By:
Econsult Corporation
3600 Market Street 6th Floor
Philadelphia PA 19104

FINAL – December 11, 2007

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EXECUTIVE SUMMARY

Growth share is the share of the affordable housing need generated by a municipality's actual growth from 2004 to 2018. There are residential and non-residential components to this calculation. The way in which affordable housing need is generated by non-residential growth is the subject of Task 4 - Counting Jobs at the Local Level. That method is as follows:

> *The non-residential component of growth share requires that one unit of affordable housing be provided for every 25 jobs that are created as measured by square feet of new or expanded non-residential construction according to use group.*[1]

Appendix E of the New Jersey Council on Affordable Housing's (COAH) Third Round Rules provides these ratios by building type. While the ratio of jobs created to affordable housing units required may change, the principle of the calculation remains the same. This principle was challenged by the New Jersey Supreme Court in a number of ways, and thus Task 4 concerns itself with the following considerations:

1. Counting jobs via square footage rather than directly through employment data or estimates.

   COAH was challenged by groups that wondered why employment data or estimates would not be a direct and accurate measure of jobs created. However, estimates of employment at the municipal level are not available in a timely manner. Only County Business Patterns data are available, but this data set has severe limitations, in that it is available only at the zip code level, which can cut across municipalities, and it also covers only private sector employment. Moreover, the data are available only with a significant lag time. As we approach 2008, the latest County Business Patterns data are for 2005. Knowing where new work space is being built and how much, on the other hand, is a stable and timely indicator of growth in a municipality. Moreover, municipalities currently track these construction data.

2. Not counting jobs created by the rehabilitation of existing unused or underused non-residential space.

   The decision to exclude from affordable housing need calculations any existing space that was redeveloped was one that was challenged by the Court. However, redevelopment involving the improvement of formerly under-occupied or un-occupied buildings into occupied ones does not actually generate net new jobs over time, to the extent that the affordable housing

[1] New Jersey Administrative Code 5:94-2:4. Appendix E of the Third Round rules is included in this report – see Appendix A.

obligation impact of the full square footage of such buildings, and not their present high-vacancy condition, was assigned to municipalities, per the current Appendix E ratios.

3. Seeking employment ratios specific to New Jersey.

   A final critique of the existing Appendix E ratios was that they were largely based on national data, when New Jersey proportions might differ. In response, Econsult performed a national literature review, and conducted a large telephone survey of 1000+ New Jersey businesses, to provide COAH with a more comprehensive and relevant base of knowledge in determining Appendix E ratios.

The literature review and the survey results serve as the basis for the following recommendations for updated Appendix E ratios (see Figure E.1). Importantly, because we are considering employment density from a building-wide and municipality-wide perspective, we must account for the fact that a not insignificant portion of most buildings, particularly in multi-tenant facilities, is common space. Since the intended use of these ratios is to estimate the number of jobs associated with a municipality's intended growth in non-residential space, a calculation of jobs should take as its base on non-residential space the space that is actually occupied by workers. To be sure, common space ratios vary widely over time, building type, and geography; we assume that 15 percent of building space is unused from an employment standpoint.

We also recognize that even within the universe of occupied space, at any given time buildings will experience some vacancies as a result of natural economic and real estate cycles at the local, regional, and national levels. This, of course, will tend to overestimate the number of jobs assigned to a building or a municipality. To the extent that employment growth continues to occur, this will lead to a further overstatement in raw number terms over time, or to put it another way, a greater affordable housing requirement.

Like common space ratios, vacancy rates vary widely over time, building type, and geography. For new construction, this proportion is likely to be less than 10 percent. For the purposes of this analysis, we do not make any adjustment based on vacancy, but rather assign jobs to buildings assuming full occupancy. In this way, differing vacancy rates over time, building type, and geography do not affect the amount of affordable housing required, since all calculations are based on 100 percent occupancy.

Figure E.1 – Proposed Building Types and Ratios, Employees Per 1000 Square Feet

UCC Use Grp	Building Category	NJ Survey Median	Lit Review Median	Appendix E	Recommended Ratio, Net of 15% Common Space
B	Office	3.32	3.33	3.00	2.8
M	Retail	2.00	1.72	1.00	1.7
F	Factory	1.43	2.19	2.00	1.2
S	Storage	1.72	1.11	0.20	1.5
H	Manuf	1.83	2.19	1.00	1.6
A1	Theater	1.87	N/A	2.00	1.6
A2	Restaurant	3.75	6.80	3.00	3.2
A3	Library	1.88	N/A	3.00	1.6
A4	Arena	5.00	N/A	3.00	3.4
A5	Stadium	3.45	N/A	Exclude	2.6
E	K-12	2.67	0.92	1.00	1.7
I	Hospital	3.40	2.53	2.00	2.6
R1	Hotel	2.50	0.67	0.80	1.7
U	Other	1.50		Exclude	Exclude

Source: Econsult Corporation (2007)

1.0 CONTEXT

1.1 Current Treatment: COAH's Adopted 2004 Third Round Rules

Under the third round rules adopted in 2004, growth share is the share of the affordable housing need generated by a municipality's actual growth from 2004 to 2018. There are residential and non-residential components to this calculation. The way in which affordable housing need is generated by non-residential growth is the subject of Task 4 – **Counting Jobs at the Local Level**.

In its publication, "The COAH Handbook: Your Guide to Navigating the Third Round Rules," the New Jersey Council on Affordable Housing (COAH) defines the way in which the affordable housing obligation generated by non-residential growth is determined based on the 2004 third round rules:

> *The non-residential component of growth share requires that one unit of affordable housing be provided for every 25 jobs that are created as measured by square feet of new or expanded non-residential construction according to use group.*[2]

Let us consider each component of this statement in turn:

- *One unit of affordable housing be provided for every 25 jobs that are created.* The accuracy of this ratio is not being addressed in this task. Another team, from the University of Pennsylvania, is tasked with updating the growth share ratios.

- *As measured by square feet of new or expanded non-residential construction.* Each municipality has a construction official who submits information on new construction and space-adding renovation to the New Jersey Department of Community Affairs' Division of Codes and Standards. COAH uses these data to determine the amount of actual non-residential growth in the municipality.

  - The total amount of new square feet of non-residential space being added in a municipality is therefore the sum of new construction and any renovation that adds space. In other words, **renovations that do not increase the amount of space were not included** in the sum.

  - Importantly, **demolitions currently count as negative square footage**, in that they decrease the amount of non-residential space in a municipality. Thus, demolitions decrease the amount of affordable housing that must be built in a municipality.

  - Combining the two points above, if a building is demolished and an identically-sized building constructed in its place, there is no net new affordable housing obligation created, since the two buildings' square footage cancel each other out.

[2] New Jersey Administrative Code 5:94-2:4. The current Appendix E of the Third Round rules is included in this report – see Appendix A.

- If a non-residential space is converted into residential space, an affordable housing obligation will result from the new residential space. There may be partially or fully offset by a corresponding reduction in the affordable housing obligation that results from the decrease in non-residential space.

- *According to use group.* Appendix E of the Third Round Rules segments the Uniform Commercial Code use groups into 14 categories, and provides ratios of jobs per 1000 square feet such that the number of new jobs can be determined based on the total square footage being added. For example, the ratio for Use Group B, which consists of office buildings, is three jobs per 1000 square feet, and thus a newly constructed 100,000 square foot office building would be assumed to add 300 jobs (100,000 SF x 3 jobs / 1000 SF), creating an affordable housing need of 12 units (300 jobs x 1 affordable housing unit / 25 jobs).

1.2 Court Challenges

In its opinion in regards to the adoption of COAH's Third Round regulations, the New Jersey Appellate Division listed a number of challenges to COAH's approach to calculating affordable housing need generated by non-residential development. These challenges form the basis of our response, and can be summarized as follows:

- *Using square footage of new non-residential development as a surrogate to predict job growth.* In its notice of appeal, ISP Management Company challenged the method of determining job growth indirectly, via new non-residential space, rather than employing a more direct approach and using more reliable information.[3]

  COAH's rationale was that employment data at the municipal level is not updated as frequently as construction data, and that job data may not accurately reflect where the jobs are actually located.[4] Therefore, the use of data on square footage of new construction, while not as direct in nature, is routinely collected, and can be applied uniformly in determining the affordable housing obligations of each municipality.

- *Not counting jobs created by the rehabilitation of existing underused non-residential space.* This decision, to exclude from affordable housing need calculations any existing space that was redeveloped, was noted in the court opinion as follows:

  > *Appellants contend that the methodology selected by COAH significantly understates actual job growth. They argue that a valid growth share methodology requires that an affordable housing obligation be allocated to a municipality that experiences real growth in*

[3] See page 8 and 82 of the court opinion.

[4] See page 86-87 of the court opinion.

jobs. They point out, and COAH does not dispute, that there is an abundance of existing vacant office and retail space in the State, and municipalities that experience actual job growth should also be required to provide their fair share of affordable housing to meet the need generated by that job growth.[5]

- *Allowing municipalities to subtract demolished space in their calculations of net job growth.* COAH's rationale was that to allow reductions based on job loss not accompanied by decrease in square footage would require using a different data source, inconsistent with its intent to use **uniform data sources in calculating net job growth.**

Of the three challenges, the last one, concerning demolished space, was upheld by the court: "COAH has not acted unreasonably in subtracting demolitions from new certificates of occupancy."[6]

1.3 Scope of Work

Econsult was tasked with weighing in on these three specific challenges. It was also assigned to verify or update the building types and employment estimates in Appendix E of the Third Round Rules. Therefore, this report will proceed as follows:

- In Section 2, we will summarize the results of our **literature review** on the subject of building types and employment estimates. Most notable in the studies we reviewed is one commissioned in part by COAH's parent entity, the New Jersey Department of Community Affairs, entitled, "New Jersey Demographic Multipliers: The Profile of the Occupants of Residential and Nonresidential Development."

- In Section 3, we will review our approach to conducting a large-scale **survey of non-residential locations in New Jersey**, and share our data findings. One critique of Appendix E is that it is largely based on national studies and data; this survey seeks to provide the primary research necessary to arrive at employment estimates more in line with New Jersey norms.

- Section 4 concludes our report with **findings and recommendations**. Here, we combine our lessons learned from the previous two sections in offering an updated Appendix E. We will also comment on the challenges listed above, and offer some guidance on the wording of relevant rules for future rounds.

[5] See page 85-89 of the court opinion.

[6] Page 83 of the court opinion.

2.0 NATIONAL LITERATURE REVIEW

The most comprehensive report that was identified during our literature review of building types and employees per square feet was one delivered by the Rutgers University Center for Urban Policy Research and commissioned in part by the New Jersey Department of Community Affairs, parent agency of the New Jersey Council on Affordable Housing (COAH): "New Jersey Demographic Multipliers: The Profile of the Occupants of Residential and Nonresidential Development."[7] The goal of this study was to utilize state data and national studies to estimate the effect of new residential and non-residential development on population growth.

In estimating "nonresidential multipliers" (i.e. number of employees per 1000 square feet of non-residential space, by building type), the study defines such space as "gross floor area." It also divides space into the following categories, and preliminarily suggests the following multipliers (see Figure 2.1):

Figure 2.1 – Nonresidential Multipliers Suggested by "New Jersey Demographic Multipliers" Study

Nonresidential Use	*Employees / 1000 SF*
I. Commercial	
A. Office	3.0-4.0
B. Retail	1.0-2.0
C. Eating & Drinking	3.0-4.0
II. Industrial	
A. Warehouse	0.2-0.8
B. Manufacturing & Industry	1.0-2.0
III. Hospitality and Other	
A. Lodging	0.5-1.0
B. Health	2.0-3.0
C. Schools	0.8-1.2

Source: Center for Urban Policy Research, Edward J. Bloustein School of Planning & Public Policy, Rutgers University (2006).

[7] Center for Urban Policy Research, Edward J. Bloustein School of Planning & Public Policy, Rutgers University (August 2006).

Importantly, the report acknowledges that these suggestions are based on national studies and therefore may have varying levels of applicability to New Jersey. The report specifically notes that, compared to the rest of the US, a disproportionately higher amount of office space is used for research and development, because of the state's significant pharmaceutical industry; and R&D tends to require more space per employee. Combined with the fact that other workplace trends, such as telecommuting and work sharing, are possibly taking place to greater or lesser degrees in New Jersey versus the nation, a nonresidential multiplier survey concentrating solely on New Jersey becomes all the more valuable.

The nonresidential multipliers suggested by the New Jersey Demographic Multipliers report are based on a number of national studies that were produced within the past twenty years, many of which were also included in our literature review. We also reviewed a number of additional studies on the subject, to provide a fuller picture of the issue (see Figure 2.2).[8]

Figure 2.2 - Summary of Non-Residential Multipliers Based on the New Jersey Demographic Multipliers Report and on Literature Review
Employees per 1000 Square Feet: Min/Max/ Median, Mean, Standard Deviation, and Range Recommended by New Jersey Demographic Multipliers Report

Non-Res Use	Min	Max	Median	Mean	StdDev	Recom
I. Commercial						
A. Office	2.56	4.34	3.33	3.41	0.52	3.0-4.0
B. Retail	0.57	2.48	1.72	1.79	0.56	1.0-2.0
C. Eating & Drinking	0.38	14.29	6.80	7.07	5.89	3.0-4.0
II. Industrial						
A. Warehouse	0.46	1.92	1.11	1.05	0.47	0.2-0.8
B. Manufacturing & Industry	1.43	4.76	2.19	2.46	0.99	1.0-2.0
III. Hospitality and Other						
A. Lodging	0.43	1.10	0.67	0.71	0.25	0.5-1.0
B. Health	2.00	3.25	2.53	2.58	0.48	2.0-3.0
C. Schools	0.77	1.19	0.92	0.96	0.21	0.8-1.2

Source: various

[8] See also Appendix B for a full bibliography of reports reviewed, and Appendix C for a comprehensive table of non-residential multipliers based on the New Jersey Demographic Multipliers report and on our own literature review.

3.0 NEW JERSEY SURVEY

3.1 Survey Methodology

To augment this review of national studies on the subject of non-residential multipliers with actual primary research specific to New Jersey, we hired the reed group to conduct a telephone survey of 1000+ non-residential sites. Here are the highlights of their approach to this task:[9]

- The phone list for this survey was Dun & Bradstreet's database of New Jersey business locations. Quotas were used to ensure that those actually surveyed represented the distribution of business types in the state.[10]

- The survey script, designed with the assistance of COAH and Econsult, was constructed to determine the relationship between square footage and employees.[11] The survey was pre-tested on New Jersey businesses to identify inefficiencies in survey design, and revisions were made accordingly.

- Professional market research interviewers conducted the telephone interviews, and all quality control and sample management measures common to the survey industry were employed to ensure data validity.[12]

- While a number of jobs are largely independent of a particular physical location, particularly in the construction industry, we count those jobs, to the extent that even the most location-independent job is somehow associated with a particular location.

- Self-reported building type data collected in the survey were checked against the State of New Jersey's Light Hazard Safety Database, the state's most comprehensive listing of organization names and building types. Where there were discrepancies, the state database was assumed to be correct.

- Respondents were allowed to give more than one building type, thus leading to more observations than surveys.

- To minimize the effect of outliers, we eliminated employees per square foot results that fell under the 10th percentile and over the 90th percentile for the dataset.

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[9] See Appendix D for a more detailed explanation of the survey methodology and Appendix E for tables related to the quotas employed to ensure accurate representation of all business types.

[10] Because of specific interest expressed by COAH regarding institutions of higher education, these locations were over-sampled.

[11] See Appendix F for the actual survey script.

[12] For example, clusters of phone numbers are called up to five times before moving on, ensuring that harder to reach respondents have a better chance of being included in the sample.

3.2 Survey Results

The survey of non-residential sites yielded 943 usable survey responses, which exhibited the following characteristics - depicted first by building type and second by industry group (see Figure 3.1 and Figure 3.2):[13]

Figure 3.1 – Non-Residential Survey Results
Employees per 1000 Square Feet, by Building Type

UCC Use Grp	Building Category	NJ Survey Count	Median	Std Dev
B	Office	476	3.32	3.55
M	Retail	212	2.00	3.04
F	Factory	44	1.43	2.39
S	Storage	164	1.72	3.05
H	Manuf	16	1.83	2.18
A1	Theater	8	1.87	1.77
A2	Restaurant	51	3.75	3.97
A3	Library	65	1.88	3.18
A4	Arena	5	5.00	3.34
A5	Stadium	4	3.45	3.10
E	K-12	40	2.67	3.76
I	Hospital	14	3.40	2.06
R1	Hotel	15	2.50	1.68
U	Other	31	1.50	3.78
	Total	1145	2.67	3.40

Source: the reed group (2007)

13 The sample size for survey results by building type is larger because respondents were allowed to label their location as more than one building type.

Figure 3.2 – Non-Residential Survey Results
Employees per 1000 Square Feet, by Industry Group[14]

Industry	Median
Ag, Forestry, Fishing	2.67
Construction	2.86
Finance, Insr, Real Est	3.41
Higher Education	1.67
Manufacturing	1.50
Public Admin	4.87
Retail	2.50
Services	2.50
Transportation, Utilities	3.33
Wholesale Trade	2.86

Source: the reed group (2007)

Now we can compare these New Jersey results with the ratios determined from our national literature review and from COAH's current Appendix E ratios (see Figure 3.3):

[14] There were no responses from mining companies, so they are not included in this table. See Appendix G for more detail on higher education.

Figure 3.3 – Survey Results vs. National Literature Review vs. Current COAH Rules
Employees per 1000 Square Feet

UCC Use Grp	Building Code	Building Category	NJ Survey Count	NJ Survey Median	NJ Survey Std Dev	Lit Review Median	Appendix E
B	1	Office	476	3.32	3.55	3.33	3.00
M	2	Retail	212	2.00	3.04	1.72	1.00
F	3	Factory	44	1.43	2.39	2.19	2.00
S	4	Storage	164	1.72	3.05	1.11	0.20
H	5	Manuf	16	1.83	2.18	2.19	1.00
A1	6	Theater	8	1.87	1.77	N/A	2.00
A2	7	Restaurant	51	3.75	3.97	6.80	3.00
A3	8	Library	65	1.88	3.18	N/A	3.00
A4	9	Arena	5	5.00	3.34	N/A	3.00
A5	10	Stadium	4	3.45	3.10	N/A	Exclude
E	11	K-12	40	2.67	3.76	0.92	1.00
I	12	Hospital	14	3.40	2.06	2.53	2.00
R1	13	Hotel	15	2.50	1.68	0.67	0.80
U	14	Other	31	1.50	3.78		Exclude
		Total	1145	2.67	3.40		

Source: the reed group (2007), Rutgers University (2006), COAH (2007).

3.3 Survey Analysis

Econsult was tasked with reviewing and potentially updating COAH's existing non-residential categories and ratios. Based on the results of our New Jersey survey, as compared to the current rules and to the national literature review we conducted, we would like to make the following commentary:

1) Office and 2) Retail – The ratio for both the New Jersey survey and the national literature review are higher than the current rules, possibly reflecting broader trends such as telecommuting, work sharing, and the increased role of the service industry in the wider economy.

3) Factory, 4) Storage, and 5) Manufacturing – These three categories are further subdivided by hazard level. From a personnel standpoint, it is difficult to use existing classifications to distinguish between low-density uses such as storage or machine-intensive manufacturing and high-density uses such as high-skill and labor-intensive manufacturing.[15] Since the ratios are not far from each other, one could make a case that the simplicity of collapsing these three categories into one category outweighs any accuracy gains in keeping them separate. For now, we recommend the retention of the existing categorizations.[16]

6) Theater, 8) Library, 9) Arena, and 10) Stadium – These four categories conceptually lend themselves to being collapsed into one category, since they represent similar uses and employment patterns; the results for the most part would support such a move. For now, we recommend the retention of the existing categorization. Stadiums are currently excluded from affordable housing requirements, but given the high proportion of low-skill employment they often generate, it is recommended to not exclude them from such calculations.[17]

7) Restaurant – This use is different enough from the previous four categories and from retail to merit its own category.

[15] See Appendix G for additional detail on the distribution of employees per 1000 square feet in these three building categories.

[16] Parking garages are a subset of the storage facility that likely have distinctly lower densities of employees per 1000 square feet. Our survey did not allow for the identification of parking garages, nor are they currently treated as a different building type, but they could be in the future.

[17] Our survey responses included a fair amount of part-time employees for arena respondents, although not for stadium respondents. This is a factor in the determination of our recommended ratios. See Appendix G for more detail.

11) K-12 – The survey results are significantly higher than national averages and than the current rules. Perhaps this reflects the relatively low student-to-teacher ratio and the relatively high number of administrators in the state. Nevertheless, the relatively low sample size necessitates a greater reliance on the national numbers in offering a recommended ratio.

12) Hospital and 13) Hotel – Low sample sizes prevent a more conclusive assessment, so the national numbers are particularly useful here.

14) Other – More effort could go into reclassifying these buildings into one of the above uses, but these represent only a small portion of total survey observations and are unlikely to change over all conclusions regarding employment per square foot of construction. Many of these actual uses truly do not add any net new jobs and therefore the current policy of excluding this building type seems to make sense.

4.0 FINDINGS AND RECOMMENDATIONS

In this final section, we offer an updated Appendix E, based on our New Jersey survey and our national literature review of non-residential employment density. We also return to the initial discussions from Section 1, in terms of the logic behind the use of building space as a proxy for employment rather than employment projections themselves. Finally, we offer some guidance on how this analysis can be incorporated into future revised rules.

4.1 Proposed Building Types and Ratios

Econsult was tasked with reviewing and potentially updating COAH's existing non-residential categories and ratios. While similarities in results might suggest some reclassification of categories, we do not feel the evidence is strong enough to merit any reclassification at this time. Furthermore, there does not appear to be any major benefit to streamlining the categorizations, which would offset the loss in detail associated with combining building types.

As for ratios, our recommendations are largely informed by the New Jersey survey that was conducted for this very purpose. In fact, in most cases, our recommendations are the median ratios from the survey. However, where sample sizes were small or deviations from the current Appendix E ratios or the national literature review performed by performed by the Rutgers University Center for Urban Policy Research for the New Jersey Department of Community Affairs in 2006 were great, the national literature review results were given greater weight.[18]

Importantly, these ratios represent the relationship between employees and work space.[19] If instead we are considering employment density from a building-wide or even municipality-wide perspective, we must account for unused space, or else the number of employees estimated for a particular building or municipality will be overstated. Specifically, we consider that a not insignificant portion of most buildings, particularly in multi-tenant facilities, is common space: lobbies, hallways, stairwells, and other non-work space.

Since the intended use of these employment density ratios is to estimate the number of jobs associated with a municipality's intended growth in non-residential space, these adjustments are applicable; a

[18] Survey medians were used in all recommendations except for the following: survey results for Arena, Stadium, K-12, Hospital, and Hotel were all substantially higher than national literature review medians and current Appendix E ratios, and sample sizes were small, so ratios were increased but not to the level of the survey medians. The Arena recommendation is further guided by the existence of a not insignificant number of part-time employees in those survey responses.

[19] Studies incorporated in our national literature review are also concerned with the employment density ratio as defined in this way.

calculation of jobs should take as its base on non-residential space the space that is actually occupied. Therefore, in order to translate our ratios for such a use, we must subtract out common space.[20]

To be sure, common space ratios vary widely over time, building type, and geography. Nevertheless, most industry reports report a common space ratio between 10 and 20 percent. We will therefore assume that 15 percent of building space is unused from an employment standpoint. Based on this approach and on our results and commentary from Section 3, we offer the following, updated building types and ratios (see Figure 4.1).

Figure 4.1 – Proposed Building Types and Ratios, Employees Per 1000 Square Feet

UCC Use Grp	Building Category	NJ Survey Median	Lit Review Median	Appendix E	Recommended Ratio, Net of 15% Common Space
B	Office	3.32	3.33	3.00	2.8
M	Retail	2.00	1.72	1.00	1.7
F	Factory	1.43	2.19	2.00	1.2
S	Storage	1.72	1.11	0.20	1.5
H	Manuf	1.83	2.19	1.00	1.6
A1	Theater	1.87	N/A	2.00	1.6
A2	Restaurant	3.75	6.80	3.00	3.2
A3	Library	1.88	N/A	3.00	1.6
A4	Arena	5.00	N/A	3.00	3.4
A5	Stadium	3.45	N/A	Exclude	2.6
E	K-12	2.67	0.92	1.00	1.7
I	Hospital	3.40	2.53	2.00	2.6
R1	Hotel	2.50	0.67	0.80	1.7
U	Other	1.50		Exclude	Exclude

Source: Econsult Corporation (2007)

[20] Another approach that could be considered for the future is to augment ongoing surveying of New Jersey firms, who as individual firms do not concern themselves as much with common space, with a survey of building managers, who would concern themselves with such matters and who would know such figures.

We also recognize that even within the universe of occupied space, at any given time buildings will experience some vacancies as a result of natural economic and real estate cycles at the local, regional, and national levels. This, of course, will tend to overestimate the number of jobs assigned to a building or a municipality: for example, a 100,000 square foot facility of a building type for which the employment density ratio is 2.0 employees per 1000 square feet would thus be estimated to hold 200 employees, even though at any given time, some portion of the facility is vacant and therefore has no employees in it. To the extent that employment growth continues to occur, this may lead to a further overstatement in raw number terms over time.

Like common space ratios, vacancy rates vary widely over time, building type, and geography. For new construction, this proportion is likely to be less than 10 percent. For the purposes of this analysis, we do not make any adjustment based on vacancy, but rather assign jobs to buildings assuming full occupancy. In this way, differing vacancy rates over time, building type, and geography do not affect the amount of affordable housing required, since all calculations are based on 100 percent occupancy.

4.2 Additional Recommendations

We must here address two important considerations first introduced in Section 1:

- *Counting jobs via square footage rather than employment estimates is supportable.* Estimates of employment at the municipal level are not available in a timely manner. Only County Business Patterns data are available, but this data set has severe limitations, in that it is available only at the zip code level, which can cut across municipalities, and it also covers only private sector employment. Moreover, the data are available only with a significant lag time. As we approach 2008, the latest County Business Patterns data are for 2005.

  Knowing where new work space is being built and how much, on the other hand, is a stable and timely indicator of growth in a municipality. Moreover, municipalities currently track these construction data.

- *Not counting redevelopment of vacant space.* As stated earlier, the New Jersey Appellate Division contended that since the intention of growth share is to assign affordable housing obligation where growth has occurred, redeveloped properties that do so even without adding new space should add to that obligation. However, consider the following example of a redevelopment that translates into new jobs:

  > *An existing office building is rehabilitated, and its resulting attractiveness leads to higher occupancy.* Here is a situation in which a high-vacancy or completely unoccupied building becomes a low-vacancy or no-vacancy building. Therefore, the municipality has experienced an increase in employment density. However, it first had to experience a decrease in that employment density, since it is assumed that the building was once more fully occupied and then began to experience vacancies. In other words, that building's square footage, and the associated affordable housing obligation, was properly assigned to the municipality upon its initial construction; and as the building emptied, that affordable housing obligation was not adjusted accordingly, but was assumed to be commensurate with the building's square footage.

  As this example illustrates, redevelopments that lead to increases in employment density are *either already accounted for using the existing mechanisms of counting jobs at the municipal level, or they are simply offsetting previous decreases in employment density*, such that there really is no net new affordable housing obligation created. Nevertheless, in cases of buildings becoming completely unoccupied, and then subsequently redeveloped and fully occupied, COAH may want to consider augmenting its current mechanisms by tracking such situations such that cases in which buildings become completely vacant and stay that way for a certain period of time are then removed from a municipality's square footage totals, and then added back in if they are subsequently redeveloped and re-occupied.

As suggested earlier, it will be important to conduct periodic surveys in subsequent years, to *monitor any major changes in employment density by building type*. Future surveys can utilize and build from lessons learned from this report to further hone our understanding of this important measure. For example, subsequent surveys may seek additional detail on vacancies,[21] distinct sub-types within existing building types,[22] or year of building construction.[23]

[21] Ratios of employees per 1000 square feet account for a normal level of vacancy. There is a natural cyclicality to vacancies not unlike other cycles in the real estate market. Thus, even though using a constant ratio for estimating employees per 1000 square feet may translate to temporary overestimates or underestimates of actual jobs within a municipality when vacancy rates are low or high, these fluctuations will tend to even out over time.

[22] For example, in the factory, storage, and manufacturing categories, there are clearly uses that are more labor-intensive or less labor-intensive; for example, manufacturing spaces can be almost completely automated to the point of very low employment densities, or they may require high employment densities. Additional survey questions may provide useful data in identifying more accurate ratios.

[23] It may be determined from such surveying, for example, that there are fundamental differences in employment density between existing buildings and newly constructed ones.

APPENDIX A – CURRENT APPENDIX E OF THE THIRD ROUND RULES

APPENDIX E
UCC USE GROUPS FOR
PROJECTING AND IMPLEMENTING
NONRESIDENTIAL COMPONENTS OF GROWTH SHARE
13-Jul-04

A one in 25 non-residential ratio shall be used to determine the number of affordable units to be created for each new job

Use Group	Description	SF Generating One Affordable Unit	Jobs Per 1,000 Square Feet
B	Office buildings. Places where business transactions of all kinds occur. Includes banks, corporate offices, government offices, professional offices, car showrooms and outpatient clinics.	8,333	3
M	Mercantile uses. Buildings used to display and sell products. Includes retail stores, strip malls, shops and gas stations.	25,000	1
F	Factories where people make, process, or assemble products. Includes automobile manufacturers, electric power plants, foundries, and incinerators. F use group includes F1 and F2.	12,500	2
S	Storage uses. Includes warehouses, parking garages, lumberyards, and aircraft hangers. S group includes S1 and S2. .	125,000	0.2
H	High Hazard manufacturing, processing, generation and storage uses. H group includes H1, H2, H3, H4 and H5.	25,000	1
A1	Assembly uses including concert halls and TV studios.	12,500	2
A2	Assembly uses including casinos, night clubs, restaurants and taverns.	8,333	3
A3	Assembly uses including libraries, lecture halls, arcades, galleries, bowling alleys, funeral parlors, gymnasiums and museums but excluding houses of worship	8,333	3
A4	Assembly uses including arenas, skating rinks and pools.	8,333	3
A5	Assembly uses including bleachers, grandstands, amusement park structures and stadiums	Exclude	Exclude
E	Schools K – 12	25,000	1
I	Institutional uses such as hospitals, nursing homes, assisted living facilities and jails. I group includes I1, I2, I3 and I4.	12,500	2
R1	Hotels and motels	31,250	0.8
U	Miscellaneous uses. Fences tanks, barns, agricultural buildings, sheds, greenhouses, etc.	Exclude	Exclude

Source: New Jersey Council on Affordable Housing (2006)

APPENDIX B – FULL BIBLIOGRAPHY OF REPORTS INCLUDED IN NATIONAL LITERATURE REVIEW

Abbreviations are used in Appendix C - Comprehensive Table of Non-Residential Multipliers (based on 2006 New Jersey Demographic Multipliers Study and on literature review).

- ARES - "Industrial Employment Densities," American Real Estate Society (1997).
- BOMA - "Office Space Utilization Rates," Building Owners and Managers Association (1996).
- CADOE - "Pacific Gas & Electric Survey," California Department of Energy (1996).
- CBECS - "Commercial Buildings Energy Consumption Survey," US Department of Energy (2003).
- CRT - "Census of Retail Trade," US Census Bureau (1997).
- LAEDC - "Redeveloping Obsolete Industrial Land with Modern Manufacturing Facilities: The Job, Wage, and Tax Implications for State and Local Government," Los Angeles County Economic Development Corporation (2000).
- MARTIN - "The Economic Impacts of the Value Added Regional Distribution Industry in the Portland Area," Martin Associates (2003).
- METRO - "Employment Density Study," Metro (1999).
- NELSON - "Planner's Estimating Guide: Projecting Land Use and Facility Needs," Arthur Nelson (2004).
- OTAK - "Phase 3: Regional Industrial Land Study for the Portland-Vancouver Metropolitan Area," Otak Inc. (2001).
- PARKGEN - "Parking Generation 2nd Edition," Institute of Transportation Engineers (1987).
- SANDAG - "Evaluation of Growth Slowing Policies for the San Diego Region," San Diego Association of Governments (2001).
- SFPD - "Community Planning in the Eastern Neighborhoods: Rezoning Options Workbook," San Francisco Planning Department (2003).
- TRIPGEN5 - "Trip Generation 5th Edition," Institute of Transportation Engineers (1991).
- TRIPGEN6 - "Trip Generation 6th Edition," Institute of Transportation Engineers (1997).
- USEPA - "Energy Star Hospitality Facts," US Environmental Protection Agency (2002).

- USIRS - “The Internal Revenue Service Faces Significant Challenges to Reduce Underused Office Space Costing $84 Million Annually,” US Department of the Treasury (2004).

- WASTATE - “Industrial Land Supply and Demand in the Central Puget Sound Region,” Puget Sound Regional Council (1998).

APPENDIX C – COMPREHENSIVE TABLE OF NON-RESIDENTIAL MULTIPLIERS (BASED ON 2006 NEW JERSEY DEMOGRAPHIC MULTIPLIERS STUDY AND ON NATIONAL LITERATURE REVIEW)

Abbreviations are taken from Appendix B - Full Bibliography of Reports Included in Literature Review. Shaded rows represent reports not included in the 2006 New Jersey Demographic Multipliers study.

Non-Res Use	Source	Year	Empl/1000SF
I. Commercial			
A. Office	PARKGEN	1987	2.68
	TRIPGEN5	1991	3.30
	CADOE (large)	1996	2.56
	CADOE (small)	1996	3.58
	TRIPGEN6	1997	4.00
	BOMA	1997	3.55
	WASTATE	1998	3.07
	METRO	1999	3.64
	LAEDC	2000	3.51
	SANDAG	2001	3.21
	CBECS (NE)	2001	2.99
	SFPD	2003	3.33
	NELSON	2004	3.05
	RUTGERS	2004	4.27
	USIRS	2004	4.34
B. Retail	CADOE	1996	1.70
	CRT	1997	2.44
	TRIPGEN6	1997	2.00
	WASTATE	1998	0.57
	METRO	1999	1.67
	LAEDC	2000	1.87
	CBECS (NE)	2001	1.72
	SANDAG	2001	1.70
	NELSON	2004	2.48
C. Eating & Drinking	TRIPGEN5 (restaurant)	1991	8.70
	TRIPGEN5 (fast food)	1991	14.29
	CADOE	1996	4.90
	CBECS (NE)	2001	0.38

Non-Res Use	Source	Year	Empl/1000SF
II. Industrial			
A. Warehouse	PARKGEN	1987	0.46
	TRIPGEN5	1991	1.28
	CADOE	1996	0.70
	ARES	1997	1.58
	TRIPGEN6	1997	1.28
	METRO	1999	0.59
	LAEDC	2000	1.28
	CBECS (NE)	2001	1.11
	OTAK	2001	0.82
	MARTIN	2003	0.55
	SFPD	2003	1.92
	RUTGERS	2006	0.20
B. Manufacturing & Industry	PARKGEN	1987	2.42
	TRIPGEN5	1991	1.96
	ARES	1997	2.61
	TRIPGEN6	1997	1.82
	WASTATE	1998	1.70
	METRO	1999	1.43
	LAEDC	2000	2.65
	OTAK	2001	1.85
	SANDAG	2001	3.40
	NELSON	2004	4.76
III. Hospitality and Other			
A. Lodging	CADOE	1996	0.79
	METRO	1999	0.67
	CBECS	2001	0.43
	SANDAG	2001	1.10
	USEPA	2002	0.57
B. Health	CADOE	1996	2.99
	TRIPGEN6	1997	3.25
	WASTATE	1998	2.00
	METRO	1999	2.43
	CBECS	2001	2.18
	NELSON	2004	2.62
C. Schools	CADOE	1996	1.19
	TRIPGEN6	1997	0.92
	CBECS	2001	0.77

Source: various

National Literature Review - Summary Table

Non-Res Use	Min	Max	Median	Mean	StdDev	Recom
I. Commercial						
A. Office	2.56	4.34	3.33	3.41	0.52	3.0-4.0
B. Retail	0.57	2.48	1.72	1.79	0.56	1.0-2.0
C. Eating & Drinking	0.38	14.29	6.80	7.07	5.89	3.0-4.0
II. Industrial						
A. Warehouse	0.46	1.92	1.11	1.05	0.47	0.2-0.8
B. Manufacturing & Industry	1.43	4.76	2.19	2.46	0.99	1.0-2.0
III. Hospitality and Other						
A. Lodging	0.43	1.10	0.67	0.71	0.25	0.5-1.0
B. Health	2.00	3.25	2.53	2.58	0.48	2.0-3.0
C. Schools	0.77	1.19	0.92	0.96	0.21	0.8-1.2

Source: various

APPENDIX D – NEW JERSEY SURVEY METHODOLOGY

reed group
Marketing Research & Consulting Services

MEMORANDUM

To: Lee Huang, Econsult

From: Ted Reed and Jennie Mabee

Re: Marketing Research Methodology, COAH project FINAL

Date: September 4, 2007

Sampling Methodology

Sample Source

The most comprehensive listing of businesses and business locations in New Jersey is provided by Dun and Bradstreet (D&B). Although D&B tends to under-represent new businesses and small businesses, it is the most comprehensive publicly available list of businesses and business locations in the state.

A Census of Businesses

For this project we obtained two sets of counts for business in New Jersey. The first is a complete enumeration of business headquarters and single site locations, broken out by two digit SICs and by number of employees. Based on this listing, there are 294,236 businesses of all types (including not for profits and public agencies) operating in the state of New Jersey in June 2007. The full breakout is provided in Appendix A to this memo. The second count is of all business locations in the state. This count recognizes that some businesses operate out of multiple locations. In June 2007 businesses in New Jersey were operating out of 328,632 locations. Since we want our numbers to reflect all business locations (again including not for profits and public agencies), we have used this distribution of business locations in the state as the universe from which we have drawn our sample of businesses. It will be noted that the number of business locations exceeds the number of headquarters and single site locations by 34,396 business sites. The distribution of these business locations by SIC and number of employees is included in Appendix E.

Sample of Business Locations

From this total listing we have selected a sample of business locations in proportion to the incidence of businesses in each size (number of employees) x SIC cell in the matrix of businesses included in Appendix A. Because of specific interest expressed by COAH in information on institutions of higher education (SIC 8221 and 8222) we over sampled within this SIC. The total number of business locations sampled was 42,200. This represents 42,000 business locations sampled at random and a supplemental sample of 200 businesses in higher education. This supplemental sample was drawn in proportion to the number of locations in each employee size category. Details on the distribution of the final sample are included in Appendix E.

Based on the distribution of industries and company sizes in New Jersey, targets for each industry and company size grouping were established (see Appendix E). These targets were designed to ensure adequate representation of the many types of businesses in the final data set. The final distribution of interviews appears in Appendix E.

Data Collection Methodology

Questionnaire Design

The questionnaire was developed with input from COAH in order to ensure that the survey collected all data required to perform the desired analyses. The survey was designed to capture critical information about how New Jersey businesses utilize their space and the relationship between square footage and number/type of employees. Key survey information collected included:

- Total company size (number of employees)
- Location size (number of employees at this location) including detailed information about distribution of full and part time employees as well as distribution of employees who work on and off-site
- Self-reported UCC building type
- Total square footage occupied including proportion of that space accounted for by public or common areas, square footage not currently in use and a detailed breakout of how space is used
- Primary business (industry)
- Types of jobs performed at the location and distribution of employees by each job type

The survey instrument appears in Appendix F.

Survey Pre-Test

The survey was pre-tested on a limited sample of New Jersey businesses to identify any problems in survey design prior to launching data collection. Revisions were made based on this pre-test to improve survey flow and quality of information collected.

Data Collection

Data were collected by professional market research interviewers in personal telephone interviews. Interviews were conducted incorporating stringent protocols to ensure data quality and validity. Data collection quality control measures included:

- Each interviewer was personally briefed by a Senior Project Director who is knowledgeable about project objectives as well as the sensitivity of the research
- Each interviewer completed multiple practice surveys with supervisors acting as respondents to ensure that all interviewers were familiar and comfortable with the survey before contacting potential respondents
- 20% of each interviewer's work was validated by a supervisor
- 10% of each interviewer's work was live monitored by a supervisor
- 10% of each interviewers work was validated via phone follow up with the respondent by a supervisor
- No more than 25% of the total quota completed by a single interviewer

Sample Management

Sample was administered via computer and all sample information for each respondent was recorded in the final survey data file. Sample was grouped into 21 sub-files, or replicates, with approximately 1,000 cases each. Replicates were randomly complied so that industry and size categories were represented in proportion to the overall sample. Interviewers were required to make a minimum of five attempts on each number in a replicate before moving on to the next replicate. This system ensures that harder to reach respondents have an equal chance of being included in the sample.

In addition, survey participants were entered into a lottery drawing for one of 10 Apple iPods in appreciation for their time. Providing an incentive promotes participation among less motivated respondents who might other wise exclude themselves from the sample.

Quality Control Measures for Data Integrity

CATI Survey Administration

The survey was programmed for computer administration. Using this CATI (computer assisted telephone interviewing) approach enables interviewers to focus on keeping the respondent engaged and collecting meaningful information rather than following the complicated skip patterns and instructions this survey entailed. In addition, multiple checks to ensure consistency of responses across related questions were programmed into the survey to allow interviewers to clarify and, if needed, correct inconsistent or inaccurate responses during the interview.

Data Cleaning and Verification

Throughout the data collection period, data were reviewed and cleaned to ensure that responses followed a consistent pattern and identify any irregularities requiring clarification or verification. Data irregularities such as contradictory responses, incomplete responses or extreme numerical values (outliers) were validated with a follow-up call to the respondent.

Verification of UCC Building Types

Self-reported UCC building type data collected in the survey were checked against the “Light Hazard Safety Database” complied by the State of New Jersey. Where discrepancies existed, the “Light Hazard Safety Database” categorization took precedence.

APPENDIX E – NEW JERSEY BUSINESS COUNTS AND QUOTAS

Table E.1 - New Jersey Business Universe Counts – Headquarters and Unique Locations

# employees	Industry											
	Agriculture/ Forestry/ Fishing	Mining	Retail Trade	Con-struction	Finance/ Insurance/ /Real Estate	Services (excl Higher Ed)	Higher Education (subset of services)	Manu-facturing	Transportation/ Public Utilities	Public Admin	Wholesale Trade	Total
1 – 50	7,943	135	46,972	31,651	20,663	134,215	40	14,408	10,979	687	17,180	284,873
51-100	32	5	603	233	347	1,702	0	673	296	153	408	4,452
101-249	8	1	178	98	203	996	6	487	161	158	226	2,522
250-499	3	1	60	32	89	463	11	183	74	67	89	1,072
500-999	1	0	37	4	50	219	14	115	45	28	40	553
1,000 or more	1	1	74	6	70	291	18	186	49	40	28	764
TOTAL	7,988	143	47,924	32,024	21,422	137,886	89	16,052	11,604	1,133	17,971	294,236

Source: Dun & Bradstreet (2007)

Table E.2 - New Jersey Business Universe Counts – All New Jersey Business Locations

# employees	Industry											
	Agriculture/ Forestry/ Fishing	Mining	Retail Trade	Con-struction	Finance/ Insurance/ /Real Estate	Services (excl Higher Ed)	Higher Education	Manu-facturing	Transportation/ Public Utilities	Public Admin	Wholesale Trade	Total
1 – 50	7,985	141	48,107	31,899	21,371	136,317	42	14,679	11,423	894	17,690	290,548
51-100	43	6	871	276	649	2,512	0	797	415	422	569	6,560
101-249	16	3	494	137	577	2,122	13	634	353	699	476	5,524
250-499	9	9	313	62	294	1,596	20	311	192	440	242	3,488
500-999	7	3	373	23	342	1,250	36	240	144	195	174	2,787
1,000 or more	43	12	5,806	115	3,082	5,307	118	1,082	1,624	1,635	901	19,725
TOTAL	8,103	174	55,964	32,512	26,315	149,104	229	17,743	14,151	4,285	20,052	328,632

Source: Dun & Bradstreet (2007)

Table E.3 - Completed Surveys by Industry and Company Size

# employees	Industry											
	Agriculture/ Forestry/ Fishing	Mining	Retail Trade	Con-struction	Finance/ Insurance/ /Real Estate	Services (excl Higher Ed)	Higher Education	Manu-facturing	Transportation/ Public Utilities	Public Admin	Wholesale Trade	Total
1 – 50	27	1	168	113	85	473	2	56	40	6	65	1,036
51-100	0	0	4	1	0	6	0	2	1	2	2	18
101-249	0	0	3	2	1	12	1	3	2	3	2	29
250-499	0	0	3	0	0	5	0	0	0	1	0	9
500-999	0	0	1	0	1	4	3	1	0	0	0	10
1,000 or more	1	0	23	1	8	25	4	1	8	4	3	78
TOTAL	28	1	202	117	95	525	10	63	51	16	72	1,180

Source: the reed group (2007)

Table E.4 - Space by Employee Survey

BUILDING TYPE (FROM Q.S4 – COMPLETES CAN FALL INTO MULTIPLE GROUPS)	***TAR-GET***	***INDUSTRY(FROM SAMPLE)***	***TAR-GET***	***COMPANY SIZE (FROM Q.S1)***	***TAR-GET***
Place where business transactions take place	100	Ag, Forestry, Fishing (01-09)	29	1 – 50	1039
Place where products displayed/sold	100	Mining (12 – 14)	1	51-100	24
Factory	100	Retail (52 – 59)	201	101-249	20
Storage facility	100	Construction (15 – 17)	116	250-499	13
High hazard manufacturing/ storage	100	Finance, Insurance, Real Estate (60 – 67)	94	500-999	11
Theater/concert hall/TV studio	100	Services (70 – 89, excluding codes 8221 and 8222)	529	1000+	74
Restaurant/night club/ tavern/casino	100	Higher education (codes 8221 and 8222)	10		
Site of library/lecture hall(s)/arcades, etc.	100	Manufacturing (20 – 39)	63		
Arena	100	Transportation, Utilities (40 – 49)	51		
Stadium	100	Public Admin (91 – 97)	15		
School	100	Wholesale Trade (50 – 51)	72		
Hospital/nursing home/assisted living facility etc	100				
Hotel, motel or dormitory	100				
Other	100				
TOTAL= 1400					

Source: the reed group(2007)

APPENDIX F – NEW JERSEY SURVEY SCRIPT

(ASK TO SPEAK TO A MANAGER WHO IS KNOWLEDGEABLE ABOUT THE NUMBER OF EMPLOYEES AND SQUARE FOOTAGE USED AT THIS LOCATION. IN SMALLER COMPANIES, THIS COULD BE THE OWNER, OFFICE MANAGER OR GENERAL MANAGER, IN LARGER COMPANIES START IN THE HUMAN RESOURCES DEPARTMENTAND TRY TO GET A REFERRAL TO SOMEONE WHO CAN ANSWER THE QUESTIONS)

I am calling from reed|group, an independent market research company in Philadelphia. We are doing a very brief survey designed to understand how different businesses use their space and we'd like to include your company's input. The survey should take no more than 5 minutes of your time. If you qualify and complete the interview, we will enter you into a drawing to win one of 10 Apple iPods valued at $250. ***(IF RESPONDENT ASKS,*** Your chances of winning are 1 in 140)

Screener

S1. Including yourself, how many full- and part-time employees does your company have in total, that is, at all locations including all the divisions, subsidiaries and branches of your company? If your company owns any franchise locations, please include these as well. Please include all full and part time employees and any employees who telecommute or work primarily off-site.
(READ ONLY IF RESPONDENT SAYS DON'T KNOW)
If you cannot provide an exact number, please just give us your best estimate. ***Please check one answer***

	TOTAL EMPLOYEES ALL COMPANY LOCATIONS

Interviewer: Is this an actual figure or an estimate? ***Check one***

- ❒ Actual
- ❒ Estimate

(DATA CLEANING NOTE: RESPONSE IN Q.S1 SHOULD BE CHECKED AGAINST SAMPLE INFORMATION, IF MORE THAN 10% DIFFERENCE IN THE TWO FIGURES, FLAG FOR REVIEW AND VERIFICATION)

S2. Does this company have more than one location?

- ❒ Yes ***READ:*** For the rest of this survey, please answer questions in terms of this location
- ❒ No ***(SKIP TO Q.S3B/C)***
- ❒ Don't know/Refused ***(TERMINATE)***

S3A. Including yourself, how many of those ***(ANSWER FROM Q.S1)*** employees are on the payroll for **<u>this company location</u>**? Please include all full and part time employees as well as any employees who telecommute or work primarily offsite. ***(READ ONLY IF RESPONDENT SAYS "DON'T KNOW")*** If you cannot provide an exact number, please give us your best estimate. ***(RESPONDENT MUST PROVIDE A WHOLE NUMBER, DO NOT ACCEPT A RANGE, IF DON'T KNOW OR REFUSED, TERMINATE)***

S3B/C. How many of the ***(FIGURE FROM Q.S1A OR S.3A)*** employees are full-time? How many are part-time? ***(IF UNABLE TO PROVIDE RAW NUMBER, MAY PROVIDE PERCENTAGE INSTEAD.***

PERCENTAGES MUST = 100, SUM OF NUMERICAL RESPONSES TO Q.S3B + Q.S3C MUST = RESPONSE FROM Q.S1A, ALLOW DON'T KNOW AND REFUSED)

	Type of Employee	***Number***	***RANGE OF RESPONSES***
QS3A	Total		***0 TO 999,999*** ***DK/REF TERMINATE*** ***Interviewer:*** Is this an actual figure or an estimate? Check one ❒ Actual ❒ Estimate
(CHECK COMPANY SIZE TARGETS BEFORE CONTINUING)			
QS3B	Full-Time		***0 TO 100 OR*** ***0 TO Q.S3A*** ***ALLOW DK/REF***
QS3C	Part-time		***0 TO 100 OR*** ***0 TO Q.S3A*** ***ALLOW DK/REF***
Interviewer: Are these figures actual or estimates? ***(ONLY COLLECT THIS ONCE FOR Q.S3B AND Q.S3C)*** ❒ Actual ❒ Estimate			

S3D. Do any of your full or part time employees telecommute or spend most of their time working off-site?

- ❒ Yes
- ❒ No ***(SKIP TO Q.S4)***

S3E. How many of the ***(FIGURE FROM Q.S3B)*** full time employees on the payroll at this location telecommute or spend most of their time working offsite? ***(IF UNABLE TO PROVIDE RAW NUMBER, MAY PROVIDE PERCENTAGE INSTEAD. PERCENTAGE RANGE OF RESPONSES = 0 TO 100; RAW NUMBER RANGE OF RESPONSES IS 0 TO Q.S3B RESPONSE, ALLOW DON'T KNOW AND REFUSED, IF 0 SKIP TO Q.S3G)***

S3F. And, how many of those ***(FIGURE FROM Q.S3E)*** employees spend ANY of their time working in New Jersey? ***(IF UNABLE TO PROVIDE RAW NUMBER, MAY PROVIDE PERCENTAGE INSTEAD. PERCENTAGE RANGE OF RESPONSES = 0 TO 100; RAW NUMBER RANGE OF RESPONSES IS 0 TO Q.S3E RESPONSE, ALLOW DON'T KNOW AND REFUSED)***

S3G. How many of the ***(FIGURE FROM S.3C)*** part time employees on the payroll at this location telecommute or spend most of their time working offsite? ***(IF UNABLE TO PROVIDE RAW NUMBER, MAY PROVIDE PERCENTAGE INSTEAD. PERCENTAGE RANGE OF RESPONSES = 0 TO 100; RAW NUMBER RANGE OF RESPONSES IS 0 TO Q.S3C RESPONSE, ALLOW DON'T KNOW AND REFUSED, IF 0 SKIP TO Q.S4)***

S3H. And, how many of those ***(FIGURE FROM Q.S3G)*** employees spend ANY of their time working in New Jersey? ***(IF UNABLE TO PROVIDE RAW NUMBER, MAY PROVIDE PERCENTAGE INSTEAD. PERCENTAGE RANGE OF RESPONSES = 0 TO 100; RAW NUMBER RANGE OF RESPONSES IS 0 TO Q.S3G RESPONSE, ALLOW DON'T KNOW AND REFUSED)***

QS3E	Full-Time Work off-site or telecommute		***0 TO 100 OR*** ***0 TO Q.S3B RESPONSE*** ***ALLOW DK/REF*** ***IF 0, DK OR REF, SKIP TO Q.S3G***
QS3F	Full-Time Work off-site or telecommute Any Time in NJ		***0 TO 100 OR*** ***0 TO Q.S3E RESPONSE*** ***ALLOW DK/REF***
QS3G	Part-Time Work off-site or telecommute		***0 TO 100 OR*** ***0 TO Q.S3C RESPONSE*** ***ALLOW DK/REF*** ***IF 0, DK OR REF, SKIP TO Q.S4***
QS3H	Part-Time Work off-site or telecommute Any Time in NJ		***0 TO 100 OR*** ***0 TO Q.S3G RESPONSE*** ***ALLOW DK/REF***
Interviewer: Are these figures actual or estimates? ***(ONLY COLLECT THIS ONCE FOR Q.3SE THROUGH Q.3SH)*** ❒ Actual ❒ Estimate			

S4. Now please think about the building in which your company is located. Please tell me which one of the following best describes how this building is used. ***(READ LIST, STARTING AT POINT WHICH SEEMS MOST APPROPRIATE GIVEN RESPODENT'S INDUSTRY; ACCEPT MULTIPLE RESPONSES)***
Is this building…***(READ)***…?

- ❒ A **place where business transactions take place**, such as a bank, corporate or government office, professional or medical office, car showroom or outpatient clinic
- ❒ A **place where products are displayed and sold** such as retail stores, strip malls, shops or gas stations
- ❒ **Any type of factory**, power plant, foundry or incinerator
- ❒ A **storage facility** such as a warehouse, parking garage, lumberyard or aircraft hangar
- ❒ A **high hazard manufacturing** or storage facility
- ❒ A **theater, concert hall or TV studio**
- ❒ A **restaurant, night club, tavern, casino** or other similar business
- ❒ The **site of a library, lecture hall(s), arcades,** bowling alley, funeral parlor, or gymnasium
- ❒ An **arena**, such as an ice skating rink or pool
- ❒ A **stadium**, amusement park structure, grandstands, or bleachers
- ❒ A **school** for K – 12
- ❒ A **hospital, nursing home, assisted living facility** or jail
- ❒ A **hotel, motel or dormitory**
- ❒ Some other type of building I haven't mentioned?
(SPECIFY) ____________________

CHECK BUILDING TYPE TARGETS BEFORE CONITINUING

S5A. What is the total square footage your company occupies at this location? Please include all space whether it is currently being used or not. ***(READ ONLY IF RESPONDENT SAYS, "DON'T KNOW")*** If you cannot provide an exact number, please give us your best estimate. ***(DO NOT ACCEPT A RANGE, IF DON'T KNOW OR REFUSED, TERMINATE)***

	Total Square Footage

Interviewer: Is this figure actual or an estimate?

- ❒ Actual
- ❒ Estimate

S5B. Does that figure include a share of common or public space? By common or public space, we mean areas such as rest rooms and hallways.

- ❒ Yes
- ❒ No ***(SKIP TO Q.5D)***
- ❒ Don't know ***(SKIP TO Q.5D)***

S5C. What is the square footage of common or public space included in your total square footage? ***(IF RESPONDENT CAN NOT PROVIDE A RAW NUMBER, ACCEPT A PERCENTAGE, RANGE OF RESPONSES FOR RAW NUMBER IS 1 TO Q.S3A RESPONSE, RANGE OF RESPONSES FOR PERCENTAGES IS 1 TO 100, ALLOW DON'T KNOW AND REFUSED)***

	Square Feet or % Common or Public Space

Interviewer: Is this figure actual or an estimate?

- ❒ Actual
- ❒ Estimate

S5D. Out of 100%, what proportion of that ***(ANSWER FROM Q.S5A)*** square feet is currently **<u>not being used</u>**? ***(READ ONLY IF RESPONDENT SAYS "DON'T KNOW")*** If you can not provide an exact number, please give us your best estimate. ***(IF RESPONDENT CAN NOT PROVIDE A RAW NUMBER, ACCEPT A PERCENTAGE, RANGE OF RESPONSES FOR RAW NUMBER IS 1 TO Q.S5A RESPONSE, RANGE OF RESPONSES FOR PERCENTAGES IS 1 TO 100, ALLOW DON'T KNOW AND REFUSED)***

	Total Square Footage or % Not in Use

Interviewer: Is this figure actual or an estimate?

- ❒ Actual
- ❒ Estimate

1. How would you describe your company's primary business? ***(RECORD RESPONSE VERBATIM)***

PRIMARY BUSINESS:	

(DATA PROCESSING NOTE: CODE RESPONSES TO THE INDUSTRY LIST BELOW)

(1) Accommodation and Food Services (including hotels, motels, restaurants)

(2) Administrative and Support Services (including call centers, employment agencies, professional organizations, collection agencies, credit bureaus, travel agents, security services including guards, armored cars, exterminators, janitorial, landscapers)

(3) Agriculture, Forestry, Fishing and Hunting

(4) Arts, Entertainment, and Recreation (including all types of entertainment and casinos, golf courses, skiing facilities)

(5) Construction and specialized trade contracting

(6) Educational Services (including all types of schools)

(7) Finance and Insurance

(8) Health Care and Social Assistance (including all types of physicians, social services for youth, elderly and other groups and health care facilities such as nursing homes, rehab, as well as vocational rehab and day care organizations)

(9) Information/Telecommunications/Data Hosting and Transmission (including books, newspapers, magazines, television, motion pictures, radio, telephone, internet, etc.)

(10) Manufacturing

(11) Management of Companies and Enterprises (including holding companies)

(12) Mining, Quarrying, and Oil and Gas Extraction

(13) Other Services (except Public Administration) (including all auto mechanic related jobs, repair services, personal care services, non-veterinary pet services, religious, civic and social organizations)

(14) Professional, Scientific, and Technical Services (including lawyers, engineers,

accountants, architects, scientist, advertising/marketing consultants, veterinarians)

(15) Public Administration/Government

(16) Real Estate, Rental and Leasing

(17) Retail Trade (all types of goods including mail order, catalog, online sales)

(18) Transportation and Warehousing (including all types of transportation, mailing/shipping/messenger/delivery services, and all types of warehousing)

(19) Utilities

(20) Waste Management and Remediation Services (including waste collection)

(21) Wholesale Trade (all types of goods)

(22) Something else

2A. Now I'd like to understand what type of work is performed at this location. First of all, what types of staff do you have at this location? I am looking for categories like management, operations, production workers, etc. or categories like those that can be used for payroll. ***(FILL IN CATEGORIES BELOW, DO NOT ALLOW DON'T KNOW OR REFUSED)***

2B. Out of 100%, what percent of the total employees at this location are represented by each of the types of jobs you mentioned? Please include both full and part time employees but do not include employees who telecommute or work primarily offsite.

What percent of the employees working at this location are in…***(READ EACH JOB CATEGORY)***…? ***(IF DON'T KNOW, READ)*** If you can not give me an exact figure, please just give me your best estimate. ***(IF RESPONDENT CAN NOT PROVIDE PERCENTAGES, ACCEPT RAW NUMBERS, RANGE OF RESPONSES FOR RAW NUMBERS IS O TO Q.S3A, RAW NUMBERS MUST ADD TO Q.S3; RANGE OF RESPONSES FOR PERCENTAGES IS 1 TO 100, MUST ADD TO 100% ALLOW DON'T KNOW AND REFUSED)***

JOB CATEGORY (ALLOW UP TO 10)	***PERCENT OF EMPLOYEES AT THIS LOCATION***
TOTAL	***100% OR Q.S3***

Interviewer: Are these figures actual or estimates?

- ❒ Actual
- ❒ Estimate

(DATA PROCESSING NOTE: USE LIST BELOW AS CODE LIST FOR JOB TYPES IN Q.2A/Q.2B)

Q2A/Q2B Job Types
(1) Management staff including top executives, Advertising, Marketing, Promotions, Public Relations, and Sales Managers, Operations Specialties Managers as well as all other managers and administrators
(2) Business operations specialists such as buyers, purchasing agents, entertainment agents, claims adjusters, appraisers, examiners, cost estimators, emergency management specialists, human resources professionals, business analysts, convention planners
(3) Financial Specialists including accountants, budget analysts, financial analysts/advisors, loan officers, appraisers, etc.
(4) Computer and mathematical staff including computer programmers, engineers, scientists, support specialists, actuaries, statisticians, mathematicians,
(5) Architects/engineers including surveyors, cartographers, drafters
(6) Scientists
(7) Community and Social Services staff including social workers, counselors, religious workers, clergy
(8) Legal staff including lawyers, judges, legal support staff
(9) Education, Training, and Library staff including teachers at all levels and school support staff
(10) Arts, Design, Entertainment, Sports, and Media staff including all entertainers as well as artists, designers, writers, photographers
(11) Healthcare Practitioners/Technicians and Support including all physicians, nurses, physician's assistants, health care technicians
(12) Protective Service Occupations including all law enforcement and private security personnel
(13) Food Preparation and Serving Related Staff
(14) Building and Grounds Cleaning and Maintenance Staff

(15)	Personal Care and Service Staff including hairdressers/barbers, entertainment attendance, animal trainers/caretakers, attendants, child care and home health care workers, fitness trainers
(16)	Sales and Related Staff
(17)	Office and Administrative Support Staff
(18)	Farming, Fishing, and Forestry Staff
(19)	Construction and Extraction Staff
(20)	Installation, Maintenance, and Repair Staff
(21)	Production Staff including assemblers, fabricators, food processing workers, factory workers
(22)	Transportation and Material Moving Staff
(23)	Military Personnel
(24)	Something else ________________

3. Now I'd like to understand how your company's space is used. In answering this question, please include only the space that your company is currently using. Do not include any space that is currently not in use.

As I read the following ways space might be used, please tell me out of 100%, what percentage of your company's space is currently used in this way? You will have a chance to tell me types of space that are not on the list before we finish the question. What percent of the total space is ***(READ)***? ***(ACCEPT UP TO 4 OTHER SPECIFIES, IF RESPONDENT CANNOT PROVIDE PERCENTAGES, ACCEPT RAW NUMBERS, RANGE OF RESPONSES FOR RAW NUMBERS IS O TO Q., RAW NUMBERS MUST ADD TO Q.S3A; RANGE OF RESPONSES FOR PERCENTAGES IS 1 TO 100, MUST ADD TO 100%, ALLOW DON'T KNOW AND REFUSED)***

	% OF TOTAL USED SPACE
Commercial or retail, including showrooms and display areas	
Office space	
Production space	
Conference rooms, classrooms, auditoriums, etc.	
Common or public space(s) including waiting areas, rest rooms, hallways, etc.	
Storage or warehouse space	
Other ***Please Specify:*** ______________________	
Other ***Please Specify:*** ______________________	
Other ***Please Specify:*** ______________________	
Other ***Please Specify:*** ______________________	
Total	***100%***

Interviewer: Are these figures actual or estimates?

❒ Actual

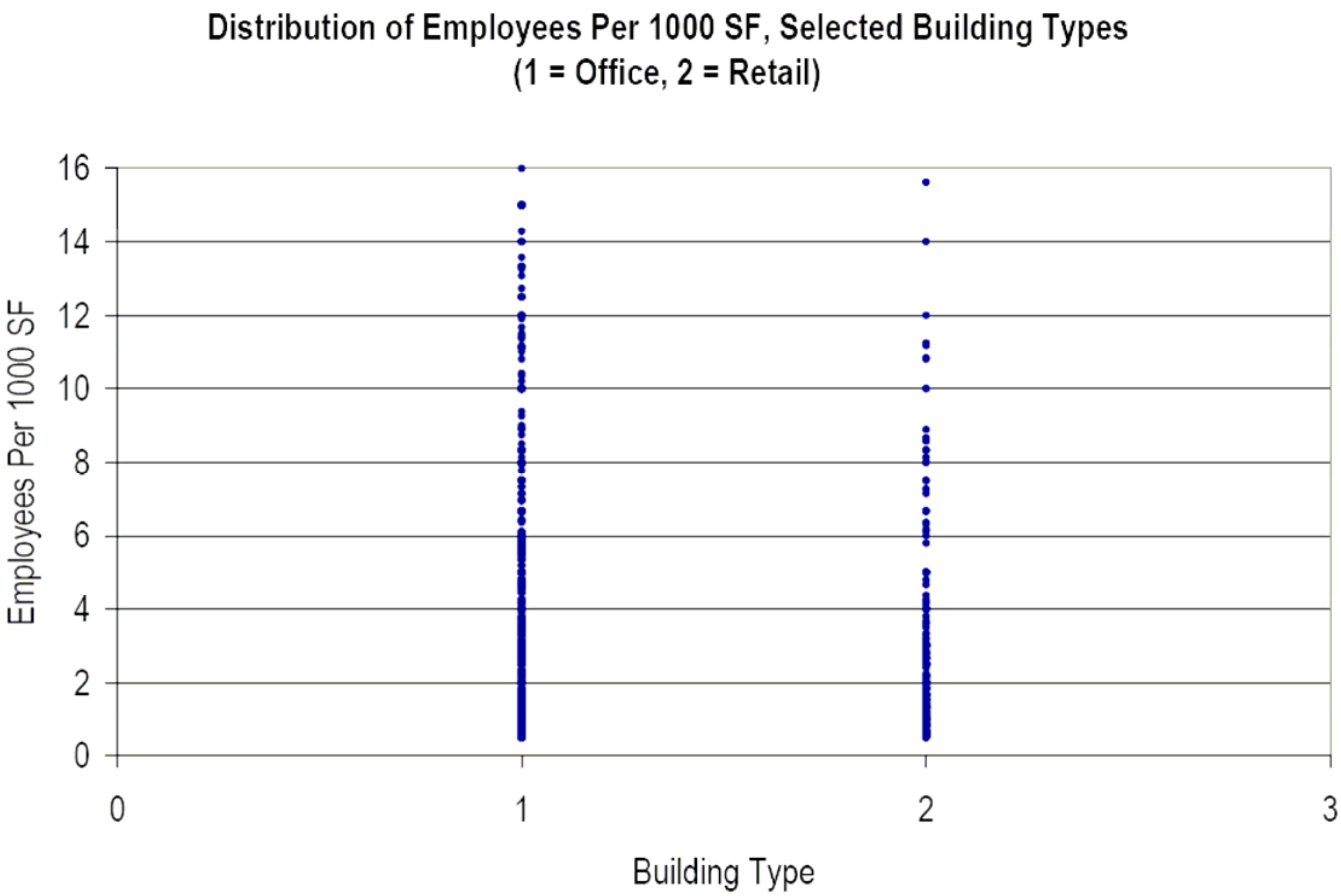
❒ Estimate

4. And finally, so I can enter you in the drawing to win one of 10 Apple iPods, please give me your name, title, company name and address. ***(DO NOT ACCEPT HOME ADDRESS, MUST PROVIDE COMPANY NAME AND STREET ADDRESS – ASSURE RESPONDENT THAT NAME, COMPANY NAME INFORMATION WILL BE USED ONLY FOR THE DRAWING AND TO VERIFY THAT A SURVEY WAS ACTUALLY COMPLETED, THIS INFORMATION WILL NOT BE RELEASED TO ANY THIRD PARTIES NOR WILL IT BE LINKED TO YOUR INDIVIDUAL RESPONSES)***

Name	
Job Title	
Company Name	
Address 1	
Address 2	
City	
State	NJ
Zip	

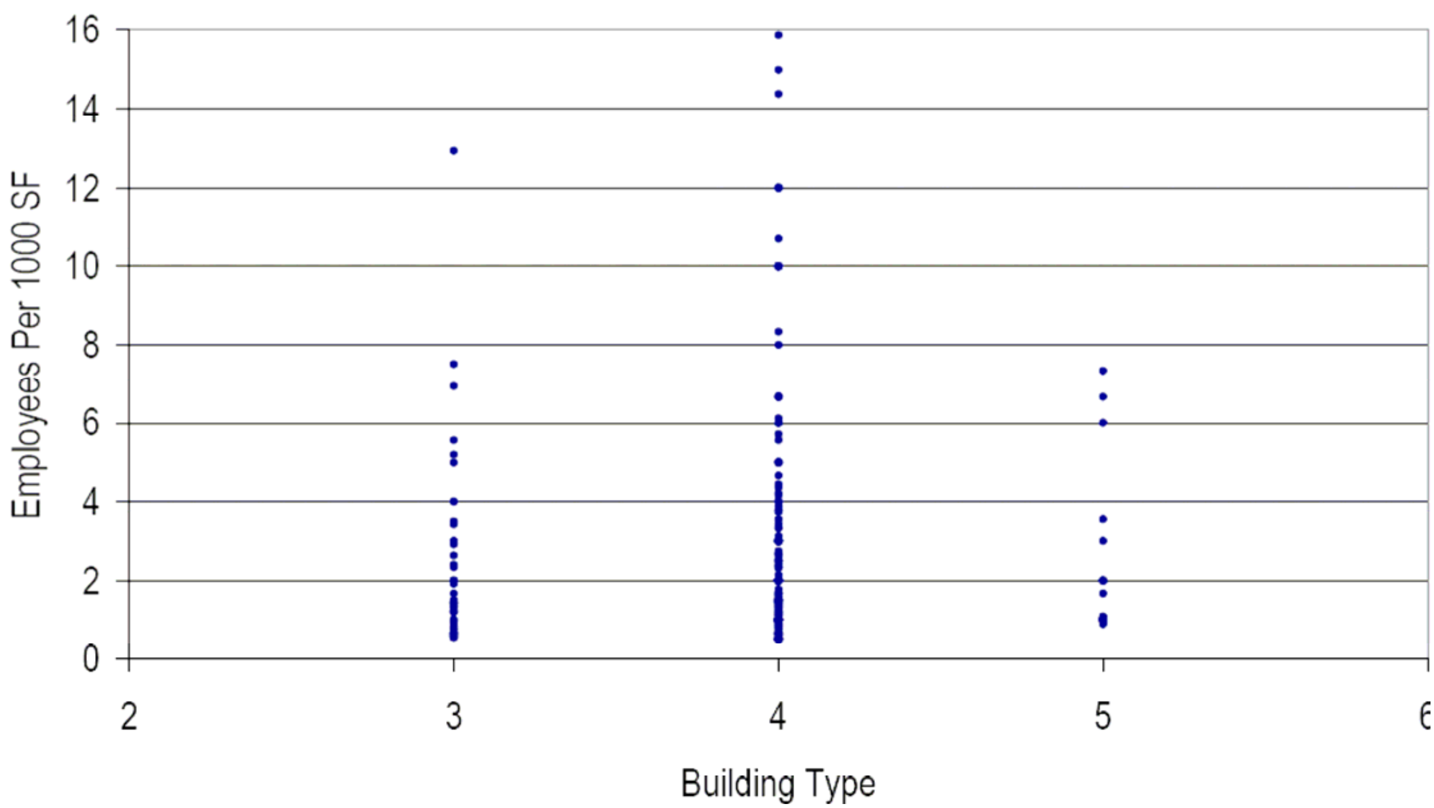
Thank you for taking the time to participate in this survey!

APPENDIX G – ADDITIONAL NEW JERSEY SURVEY RESULTS OF INTEREST



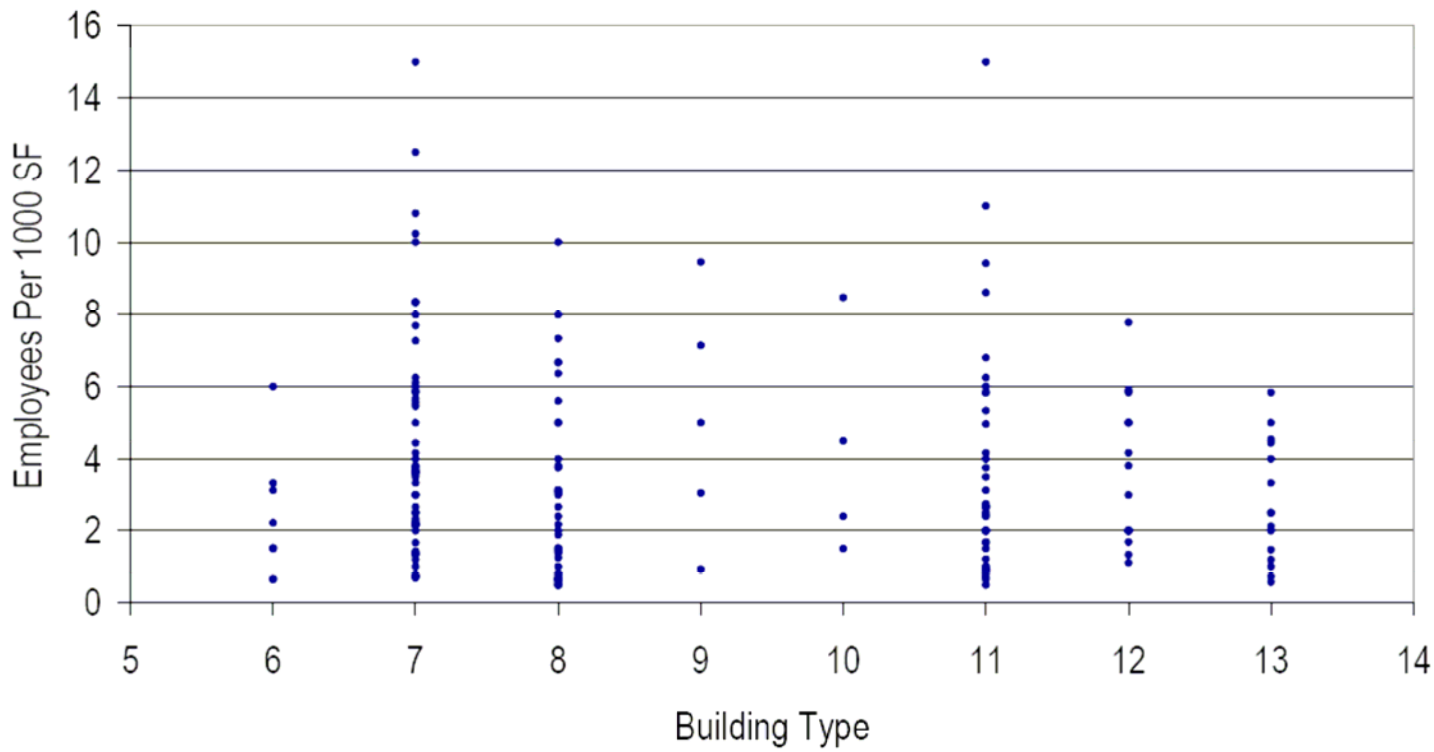
Source: the reed group(2007)

Distribution of Employees Per 1000 SF, Selected Building Types
(3 = Factory, 4 = Storage, 5 = Manufacturing)



Source: the reed group(2007)

Distribution of Employees Per 1000 SF, Selected Building Types (6 = Theater, 7 = Restaurant, 8 = Library, 9 = Arena, 10 = Stadium, 11 = K-12, 12 = Hospital, 13 = Hotel)



Source: the reed group(2007)

Survey Responses, Selected Building Types and Industries

	S3A Location # employees	S3B Total FT employees	S3C Total PT employees	Q3 % Office space	Empl / 1000SF
Arenas	17	2	15	10	9.44
	40	40		90	0.20
	1	0	1	10	5.00
	2	2		99	0.16
	6	6		5	0.03
	1	1		0	0.93
	1437	728	709	30	3.05
	25	4	21	10	7.14
Stadiums	11	11		100	8.46
	72	65	7	5	2.40
	150	150		25	1.50
	8	6	2	5	26.67
	400	350	50	30	0.29
	9	9	0	75	4.50
Higher Education	1437	728	709	30	3.05
	400	350	50	30	0.29
	160	68	92	20	2.67
	1	1	0	100	1.43
	350	200	150	20	0.41
	990	890	100	7	0.80
	15	12	3	10	0.30
	2	1	1	20	1.67
	57	54	3	40	1.88
	675	317	358	14	1.52

Source: the reed group (2007)