To: **EMP Committee (emp.comments@bpu.nj.gov)**
From: **Kara Saul Rinaldi, Vice President of Government Affairs, Policy and Programs**
Building Performance Association
Re: **IEP Feedback**
Date: **November 15, 2019**

Thank you for the opportunity to comment on New Jersey's Integrated Energy Plan (IEP). As leaders in the residential energy efficiency industry, the Building Performance Association[1] (formerly the Home Performance Coalition) supports New Jersey's 100% Clean Energy by 2050 and 80x50 goals and we appreciate your consideration of the following comments as the EMP Committee finalizes the 2019 Energy Master Plan. This response links to several studies and resources to assist the EMP Committee.

Accelerated Efficiency – Best Available Technology by 2025

One of the key assumptions used in the IEP is on how new technologies will be adopted. The IEP modeling approach assumes that when end-use technologies reach the end of their useful life, they will be replaced with the most energy efficient technology possible, e.g. high-efficiency electric heat pumps replacing natural gas furnaces. The Building Performance Association (BPA) believes it is important to recognize that in the residential building sector there are a number of barriers that currently stand in the way of the most energy efficient appliances and technologies being adopted to replace older, less efficient models. High upfront costs and lack of education and awareness prevent many homeowners from investing in the best available technology. Furthermore, at the time of breakage a homeowner may have only a short window of time to get a replacement technology.

As findings from the IEP are incorporated into the final EMP, the EMP Committee should consider the specific policies and strategies needed to address these barriers and enable accelerated efficiency as outlined in the IEP Least Cost Scenario. In particular, New Jersey should consider policies and programs that support low-cost funding and financing mechanisms for energy efficiency measures in the residential sector. A Policymaker's Guide to Scaling Home Energy Upgrades, prepared by BPA for the Department of Energy's State Energy Efficiency Action Network in 2015, discusses how policymakers can use incentives and financing to help homeowners manage the upfront costs of residential energy efficiency upgrades—including through on-bill financing and Residential Property Assessed Clean Energy (R-PACE) programs.

[1] The Building Performance Association is a 501(c)6 industry association dedicated to advancing the home and building performance industry by ultimately delivering improved energy efficiency, health, safety, and environmental performance of buildings. BPA was created to combine the expertise and resources of the Home Performance Coalition, Efficiency First, and Home Energy Magazine.

Expanding energy efficiency programs for all income levels is another key strategy for ensuring more homeowners across New Jersey have access to the best available technology by 2025. In 2017, BPA released Weatherization and Home Performance: Recommendations for Mutual Success and Collaboration, which aimed to identify opportunities and barriers in creating a more unified set of cost-effective residential energy efficiency programs for all income levels and to discuss the untapped potential for residential energy efficiency.

The Building Performance Association also urges New Jersey to engage home performance and HVAC contractors, who are interacting with homeowners every day, to identify and support successful approaches for accelerating the adoption of the most energy efficient technology available.

Smart Technologies and Load Flexibility

In the public webinar on November 1, 2019, the Rocky Mountain Institute presenters mentioned that the IEP looks at where it is most cost-effective to use flexible load, like water heating and EV charging, versus installing new supply-side resources. It is unclear, however, if and to what extent the IEP considers the impact of residential peak demand reduction policies or other incentives for flexible load in the Least Cost Scenario or other models. We urge New Jersey to fully assess opportunities for load flexibility coupled with energy efficiency in the residential sector to maximize the use of intermittent renewable generation and support grid reliability.

As detailed in the Building Performance Association's 2018 report Redefining Home Performance in the 21st Century: How the Smart Home Could Revolutionize the Industry and Transform the Home-to-Grid Connection the use of smart technologies in homes is an important way to make the residential sector, and the homeowners and ratepayers who comprise it, a part of the energy grid solution. Smart technologies help advance energy efficiency in buildings, driving additional savings and connecting efficiency measures with new opportunities to provide load flexibility. Smart thermostats, for example, offer monitoring, control, and optimization of HVAC systems to take advantage of energy saving opportunities (e.g., via learned schedules and low energy "away" modes) and they can also be used for demand response. When paired with other efficiency measures like a tight, well-insulated building envelope and efficient window attachments that help keep the home at a comfortable temperature, smart thermostats can adjust the setpoint slightly to save energy and ease strain on the grid—all with little to no effort from the homeowner.

The first of ten recommendations in Redefining Home Performance in the 21st Century calls on states like New Jersey to look at their home performance retrofits programs to recognize the value of adding smart technology. Historically, New Jersey's home performance programs have focused on improving the thermal quality of the building shell and increasing the efficiency of HVAC and other appliances. Smart home technologies add a third efficiency strategy: better control. In addition, smart home technologies provide extremely valuable byproducts: data and granular level monitoring capabilities. This data and monitoring capability provide an

unprecedented ability to conduct near real-time quality control for home improvement installations. Time is money: for the utility anticipating energy savings from home predictions, for the contractor who has to fill out endless forms for evaluations, for the programs that pay evaluators to tell them if their programs are performing to expectations. The NJBPU should consider utilizing smart tools (meters and home energy management systems) to do near real-time evaluations, address poor performing or over-predicting contractors, and reward contractors with work that exceeds expectations. By reducing evaluation and paperwork costs, programs can reach more customers and have more opportunity to meet energy savings and emissions reductions goals.

The Building Performance Association recommends that the IEP and New Jersey's final EMP consider all opportunities to deploy residential load flexibility as a cost-effective resource for decarbonization. As stated in our comments on the Draft 2019 Energy Master Plan,[2] we recommend that the 2019 NJ EMP include smart grid-interactive technologies for residential buildings as part of *Strategy 3: Maximize Energy Efficiency and Conservation and Reduce Peak Demand*. Smart technologies provide new control and insights to manage and reduce peak demand and make buildings use energy more efficiently at the most cost-efficient times.

Advanced metering infrastructure (AMI) is a key enabling technology for advancing both energy savings and load flexibility across the residential sector. BPA was encouraged by *Goal 5.3.1: Strategic and coordinated rollout of Advanced Metering Infrastructure* in the Draft EMP. We urge the EMP Committee to highlight the importance of ensuring smart meter penetration across the residential sector in the final EMP. As we mentioned in our previous comments in support of the development of the Energy Master Plan,[3] smart meter penetration would allow for data access and data monitoring that could improve the EM&V of residential efficiency programs while opening up policies like time of use rates and demand response programs to allow consumers to engage in reducing their utility bills. Programs that utilize smart meter data can emphasize savings when power is most expensive or polluting and, thus, energy savings are most valuable. This would also support better integration of renewable energy, energy storage, and grid-interactive technologies. The Building Performance Association again urges NJBPU to issue recommendations for utilities to accelerate AMI installation across the residential sector.

Building Electrification

The IEP identifies building electrification as a key part of the Least Cost Scenario to meet New Jersey's emissions goals. The Building Performance Association urges the EMP Committee to consider that while electrification is a key step for advancing energy efficiency, today many homes in New Jersey could still improve energy efficiency—and achieve emissions reductions and cost savings—by switching from propane or oil furnaces to natural gas.

[2] Comments submitted in the matter of the Draft 2019 Energy Master Plan, September 16, 2019.

[3] Comments submitted in the matter of the New Jersey 2019 Energy Master Plan, October 12, 2018; comments submitted in the matter of the Draft 2019 Energy Master Plan, September 16, 2019.

As mentioned in our previous comments submitted to the New Jersey Board of Public Utilities,[4] a concern for HVAC contractors in New Jersey is that limiting eligibility for fuel switching incentives only to homeowners who switch to a high-efficiency electric heat pump would impede the adoption of efficiency upgrades for HVAC, given that converting to a heat pump configuration may be cost-prohibitive or require major renovation. In addition, the cost savings for converting from oil to an electric heat pump are often less than the savings from converting to natural gas, especially because of New Jersey's current electricity rates. Homeowners who use propane or oil furnaces could increase their efficiency by switching to natural gas and high efficiency equipment, but the changes that were initially proposed in the FY20 CRA, Budgets and Program Plans would make them ineligible for an incentive to do so and could result in missed opportunities to increase access to efficiency.

We reiterate our recommendation that New Jersey study this issue further to ensure adequate home performance with heat pumps as the state pursues building electrification. We also recommend that while electric heat pumps receive an incentive, during the study phase, homeowners that have access to natural gas (such that no new lines are needed) should be also able to receive an incentive for switching from propane or oil to natural gas, for advancing energy efficiency and reducing carbon emissions.

Benefits of Meeting New Jersey Emissions Targets – Consider Job Creation

The IEP found that meeting emissions targets would result in net benefits for New Jersey given that incremental costs are offset by fossil fuel cost savings and cost savings associated with reduced pollution. The Building Performance Association encourages New Jersey to also consider the jobs and economic benefits of increasing investment in energy efficiency in order to meet emissions reduction goals. As the Committee finalizes the EMP, the economic and business development impact of the energy efficiency business sector in New Jersey and its enormous potential for growth should be a top of mind consideration.

As a market sector, energy efficiency has a lot to offer to New Jersey. According to the new September 2019 Energy Efficiency Jobs in America report from E4TheFuture, energy efficiency as a market sector employed over ***2.3 million Americans*** and accounted for about half (76,000) of the entire energy industry's new jobs (151,700) in 2018. According to the report, New Jersey saw 7.1% growth in energy efficiency jobs in 2018, with a total of 36,206 New Jersey residents now employed in energy efficiency—a significant number of jobs in a state with approximately 9 million residents. However, New Jersey is still underperforming in energy efficiency job creation and ranks 47th in the nation among states in per capita employment in this critical clean job creation category (see Exhibit A). Energy Efficiency Jobs in America report also indicates that there were 86,473 energy efficiency jobs in Massachusetts in 2018—that's more than twice the number represented in New Jersey, in a

[4] Comments submitted in the matter of FY20, Budgets and Program Plans, June 11, 2019.

state with a significantly smaller population—less than 7 million residents. Massachusetts has adopted pro-job growth energy efficiency programs and policies. State policy in New Jersey could help develop more robust energy efficiency industry investment levels, entrepreneurial risk taking and small business development. (The E4TheFuture report found that 76% of energy efficiency businesses in New Jersey have fewer than 20 employees.)

The 2019 Energy Efficiency Jobs in America report highlights one critical theme that New Jersey should consider in developing energy efficiency policy: properly designed and implemented energy efficiency and demand response programs have been demonstrated in numerous state and national studies to be the lowest cost, most predictable and most immediate method to reduce energy demand and therefore CO2 emissions, create local jobs, provide opportunities for small business energy efficiency entrepreneurs while also providing health and comfort benefits to consumers and lower utility rates in the long term. BPA believes that New Jersey could do better in economic development and job creation in the energy efficiency industry. Reforms and updates to New Jersey's cost effectiveness testing approaches through a comprehensive NSPM review, described in more detail below, and other measures could help better align the state's energy efficiency programs to achieve its economic development and job creation goals.

As New Jersey finalizes its 2019 Energy Master Plan and incorporates the IEP findings – two observations should remain top of mind: 1) the market sector with the most energy jobs in the states is energy efficiency; and 2) the policies developed and implemented by states such as New Jersey on energy efficiency can have a profound impact on job growth. Many New Jersey based home performance contractors and small businesses are eager to invest in and expand the state's energy efficiency industry.

Develop a "New Jersey" Cost-Effectiveness Test

Finally, in previous comments[5] we have requested that NJBPU review the fundamental principles of the May 2017 National Standard Practice Manual (NSPM), available on the National Efficiency Screening Project's website, which provides an implementation guide for reforming cost-benefit analysis methods. As the Committee finalizes the EMP and incorporates the IEP findings on least-cost pathways that meet both the energy needs of New Jersey's growing economy and the state's emissions reduction targets, the Building Performance Association recommends again that the NJBPU establish a stakeholder process to utilize the NSPM and develop a "New Jersey" test that is based on sound economic principles and best meets the needs and values of the state. We believe the NSPM framework and its step-by-step approach would provide NJBPU an opportunity to determine whether its current cost-

[5] Comments submitted on behalf of the Home Performance Coalition (now the Building Performance Association) in the matter of the New Jersey 2019 Energy Master Plan, October 12, 2018; and on Docket QO19010040, February 15, 2019. Comments submitted on behalf of the Building Performance Association in the matter of FY20, Budgets and Program Plans, June 11, 2019; and in the matter of the Draft 2019 Energy Master Plan, September 16, 2019.

effectiveness testing reflects New Jersey's revised energy goals and policies, including those laid out in the final EMP.

The NSPM builds and expands upon the decades old California Standard Practice Manual and provides current experience and best practices. The NSPM presents accounting procedures for applicable hard-to-monetize costs and benefits, with guidance on a wide range of fundamental aspects of cost-effectiveness analyses and the adequate consideration of all relevant costs and benefits for both the utility system and the non-utility system. The NSPM sets forth broad principles for accomplishing these goals:

National Standard Practice Manual Principles

Efficiency as a Resource	EE is one of many resources that can be deployed to meet customers' needs, and therefore should be compared with other energy resources (both supply-side and demand-side) in a consistent and comprehensive manner.
Policy Goals	A jurisdiction's primary cost-effectiveness test should account for its energy and other applicable policy goals and objectives. These goals and objectives may be articulated in legislation, commission orders, regulations, advisory board decisions, guidelines, etc., and are often dynamic and evolving.
Hard-to-Quantify Impacts	Cost-effectiveness practices should account for all relevant, substantive impacts (as identified based on policy goals,) even those that are difficult to quantify and monetize. Using best-available information, proxies, alternative thresholds, or qualitative considerations to approximate hard-to-monetize impacts is preferable to assuming those costs and benefits do not exist or have no value.
Symmetry	Cost-effectiveness practices should be symmetrical, where both costs and benefits are included for each relevant type of impact.
Forward-Looking Analysis	Analysis of the impacts of resource investments should be forward- looking, capturing the difference between costs and benefits that would occur over the life of the subject resources as compared to the costs and benefits that would occur absent the resource investments.
Transparency	Cost-effectiveness practices should be completely transparent, and should fully document all relevant inputs, assumptions, methodologies, and results.

The Building Performance Association and other members of the National Efficiency Screening Project would be pleased to brief the NJBPU or other state Agencies on how a "New Jersey" test could be developed to best meet the needs of the policymakers and ratepayers in New Jersey.

Thank you for this opportunity to submit comments. Please do not hesitate to contact me with questions.

Sincerely,

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Exhibit A

US Energy Efficiency (EE) Jobs Per Capita

State	Gross EE Jobs	Population	EE Jobs Per Capita	Per Capita Rank	Gross Jobs Rank
DC	12,807	702,455	0.0182	1	36
VT	11,035	626,299	0.0176	2	41
WY	7,528	577,737	0.0130	3	45
DE	12,514	967,171	0.0129	4	38
MA	86,473	6,902,149	0.0125	5	7
RI	12,773	1,057,315	0.0121	6	37
MD	70,530	6,042,718	0.0117	7	11
WI	63,141	5,813,568	0.0109	8	14
OR	42,547	4,190,713	0.0102	9	20
UT	31,798	3,161,105	0.0101	10	25
CT	35,597	3,572,665	0.0100	11	23
VA	78,670	8,517,685	0.0092	12	10
NH	11,733	1,356,458	0.0086	13	39
MI	85,061	9,995,915	0.0085	14	8
SD	7,496	882,235	0.0085	15	46
WA	63,877	7,535,591	0.0085	16	13
NC	86,559	10,383,620	0.0083	17	6
IN	55,090	6,691,878	0.0082	18	16
MN	46,191	5,611,179	0.0082	19	18
MT	8,673	1,062,305	0.0082	20	43
CA	318,542	39,557,045	0.0081	21	1
TN	53,006	6,770,010	0.0078	22	17
ND	5,425	760,077	0.0071	23	50
IL	89,469	12,741,080	0.0070	24	5
NE	13,533	1,929,268	0.0070	25	35
OH	81,676	11,689,442	0.0070	26	9
MO	41,845	6,126,452	0.0068	27	21
IA	20,587	3,156,145	0.0065	28	30
ME	8,647	1,338,404	0.0065	29	44
NY	123,292	19,542,209	0.0063	30	3
AL	30,821	4,887,871	0.0063	31	26
AK	4,617	737,438	0.0063	32	51
AZ	43,418	7,171,646	0.0061	33	19
CO	34,342	5,695,564	0.0060	34	24
KS	17,287	2,911,505	0.0059	35	31
SC	29,984	5,084,127	0.0059	36	27

GA	61,193	10,519,475	0.0058	37	15
KY	25,530	4,468,402	0.0057	38	28
TX	162,816	28,701,845	0.0057	39	2
FL	118,412	21,299,325	0.0056	40	4
PA	68,820	12,807,060	0.0054	41	12
MS	15,403	2,986,530	0.0052	42	32
AR	15,147	3,013,825	0.0050	43	33
ID	8,747	1,754,208	0.0050	44	42
LA	22,152	4,659,978	0.0048	45	29
HI	5,850	1,420,491	0.0041	46	48
NJ	**36,206**	**8,908,520**	**0.0041**	**47**	**22**
WV	6,844	1,805,832	0.0038	48	47
NV	11,155	3,034,392	0.0037	49	40
OK	14,372	3,943,079	0.0036	50	34
NM	5,636	2,095,428	0.0027	51	49

Sources: Energy Efficiency Jobs in America published September 2019. Population numbers are US Census estimations for 2018