

INTERSTATE POWER AND LIGHT COMPANY

ENERGY EFFICIENCY LIMITED PLAN MODIFICATION

DOCKET NO. EEP-2018-0003

Revised November 2, 2020

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ENERGY EFFICIENCY PLAN LIMITED MODIFICATION

I. EXECUTIVE SUMMARY

On March 26, 2019, the Iowa Utilities Board (Board) in Docket No. EEP-2018-0003, approved Interstate Power and Light Company's (IPL) 2019-2023 Energy Efficiency Plan (Plan). IPL closely measures its programs' performance against goals throughout the Plan period, providing annual reports to the Board and ongoing updates to stakeholders. Now in the second year of Plan implementation, IPL is pursuing an opportunity identified by key stakeholders during the Plan proceeding to administer a Smart/Wi-Fi Thermostat Demand Response (DR) Pilot for residential customers. This pilot will provide an opportunity for customers to engage with a new smart energy technology that allows them to better monitor and manage their energy usage. The pilot also supports IPL's efforts to manage peak demand in Iowa in the near-term and creates a platform for future partnerships with customers to expand the DR portfolio as a supply-side resource within our Clean Energy Blueprint. The pilot will allow IPL to interface with customers' existing smart/Wi-Fi connected thermostats and, using DR algorithms, shift HVAC loads to off peak hours in order to smooth out customers' energy curves while optimizing comfort for the pilot participants. Upon approval of this Plan modification, IPL can begin to accomplish these demand management goals during the summer of 2021, 2022, and 2023 and capture the additional benefit of winter load management during the 2021/2022,

2022/2023, and 2023/2024 heating seasons.¹ In this Application, IPL proposes a modification of its 2019-2023 Plan by adding a new Smart/Wi-Fi Thermostat DR Pilot, as part of the Demand Response Portfolio. This new pilot will run in parallel with the existing Residential Direct Load Control (DLC) program for the duration of the current Plan (2020-2023), providing customers additional DR options.

IPL will not actively recruit customers into the DLC program but will closely monitor participation to assess if natural attrition from the DLC program provides opportunities for customers to engage with the new pilot. Additionally, IPL will not purchase new switches to replace failing units for the DLC program. These one-way switches are a first-generation customer-side DR technology that lacks many of the advantages of newer smart thermostat technology. IPL will offer customers with failed switches the opportunity to transition to the new pilot. IPL will fully address the future of the DLC program in its next Plan (2024-2028) filing.

This Application presents goals, budgets and the results of IPL's cost-effectiveness analysis for the new pilot for the remaining Plan years (2020-2023).² Approving this modification request to add the Smart/Wi-Fi Thermostat DR Pilot to IPL's energy efficiency portfolio will expand customer options to engage in IPL's programs, encourage the adoption of new DR technologies focused on more holistic, year-round demand reduction, and provide more tangible DR benefits to IPL customers and to the utility.

¹ IPL's current Energy Efficiency Plan goes through 2023. This Scope of Work (SOW) will extend through the 2023/2024 winter DR season.

² Start-up costs occur in 2020 and are included within this application

II. PILOT MODIFICATION ANALYSIS

In the sections below, IPL provides a description of the proposed Smart/Wi-Fi Thermostat DR Pilot, including the demand reduction and participation goals, budgets and cost-effectiveness analysis results based on proposed benefits and costs.

A. *Smart/Wi-Fi Thermostat Demand Response Pilot*

Pilot Enrollment

The Smart/Wi-Fi Thermostat DR Pilot provides three tracks for pilot enrollment:

(1) **Bring your own Device (BYOD).** The BYOD track targets customers who already have an eligible smart thermostat. IPL's selected vendor will work with thermostat manufacturers to coordinate in-app (where available) and co-branded outreach campaigns to IPL customers with existing smart thermostats. Customers will receive an enrollment incentive in the form of a \$50 prepaid Visa card to encourage participation.

(2) **Self-Install.** The Self-Install track will engage customers who purchase a new device and enroll in the pilot. Self-install customers can purchase a new eligible thermostat through any retailer (and may receive an incentive through IPL's Residential Prescriptive Rebates program) or a future online IPL Energy Marketplace, when it becomes available.

Customers who purchase a smart thermostat through the Energy Marketplace will have the option of pre-enrolling the device in the pilot and receiving the enrollment incentive (\$50) at the point of purchase. Depending on the brand purchased, the thermostat will either be pre-authorized to participate in

the pilot upon shipment (requiring only installation to be available as a DR resource) or pre-enrolled in the pilot. Pre-enrolled thermostats will require the customer to complete additional enrollment steps after installation, and the pilot implementer will email instructions to customers following their purchase.

Self-install customers who purchase a new eligible thermostat through another retailer and sign up for the pilot through IPL and will also receive instructions at the time of enrollment.

(3) **Direct Install.** As an additional enrollment pathway for the pilot, IPL may offer participants in the DLC program a direct install thermostat if their air conditioner switch fails. IPL may offer smart thermostats to these and other customer groups at no cost (this is expected to be offered to only a limited number of customers, if any).³

Pilot Operations

Pilot enrollment occurs when the device is installed, and the implementation contractor is granted permission to manage the device and verifies pilot and equipment eligibility requirements are met. IPL's implementation contractor will manage de-enrollments and recruit new customers to compensate for customers who de-enroll to maintain enrollment level participation goals.

IPL will call DR events, which typically occur on the hottest days of the summer and coldest days of winter. To maximize customer participation in events, IPL will generally call no more than 15 events per cooling and heating season,

³ Direct install is not a major component to the pilot and as such is not included as an input within the cost effectiveness calculations. Any direct install costs that may be incurred are considered part of pilot administration costs.

respectively. The minimum advance notice is at least two hours before an emergency event, and by a pre-determined time of day prior to a non-emergency event. Best practice indicates performance of DR events increases with the amount of advance notice provided.

Enrolled customers will receive a \$25 DR participation incentive (via a mailed Visa prepaid card) at the end of each summer cooling season to all customers still enrolled on September 30. Customers participating in winter DR will also receive a \$25 incentive (via a mailed Visa prepaid card) at the end of each winter heating season. Customers must be enrolled for the summer cooling season to be eligible for participation in the winter heating season. Winter heating season will not be a stand-alone enrollment.

1. Impact and Participation Goals

Table 1 presents the proposed Smart/Wi-Fi Thermostat DR Pilot goals for 2021-2023. The pilot is not expected to generate energy savings (kWh or therms), as the pilot design includes pre-cooling and pre-heating energy usage, which tends to offset any energy savings during events.

Table 1. Smart/Wi-Fi Thermostat DR Pilot Demand Reduction Goals (Proposed)

	2021	2022	2023	Total
Electric Impacts				
Summer Peak Demand (kW)	5,000	10,000	15,000	NA
Winter Peak Demand (kW) ¹	0	153	306	NA
Natural Gas Impacts				
Peak-Day Demand (therms) ¹	0	392	784	NA

¹ Because IPL is summer peaking utility, winter impacts are treated as secondary benefits to the pilot

Proposed participation for this pilot is described in Table 2 below.

Table 2. Smart/Wi-Fi Thermostat DR Pilot Participation Assumptions (Proposed)

	2021		2022		2023	
	Summer	Winter	Summer	Winter	Summer	Winter
Participants - Incremental	5,000	0	5,000	1,000	5,000	1,000
Participants - Cumulative	5,000	0	10,000	1,000	15,000	2,000

2. Budget

Table 3 reports the 2020-2023 overall budgets for the Smart/Wi-Fi Thermostat DR Pilot with 2020 reflecting start-up and initial marketing costs. Proposed and approved portfolio budgets are provided in Appendix A.

Table 3. Smart Thermostat DR Pilot Proposed Budgets

	2020	2021	2022	2023	Total
Electric Budget					
Planning and Design	\$0	\$0	\$0	\$0	\$0
Administration	\$416,700	\$605,400	\$830,400	\$61,200	\$1,913,700
Advertising and Promotion	\$105,000	\$140,000	\$120,000	\$120,000	\$485,000
Customer Incentive	\$20,000	\$456,600	\$595,000	\$525,000	\$1,596,600
Equipment Cost	\$0	\$0	\$0	\$0	\$0
Installation Cost	\$0	\$0	\$0	\$0	\$0
Monitoring and Evaluation	\$0	\$0	\$0	\$0	\$0
Electric Total	\$541,700	\$1,202,000	\$1,545,400	\$706,200	\$3,995,300

3. Cost-Effectiveness of Modification

Table 4 provides the calculated benefit-cost (B/C) ratios based on the societal test for this pilot. The detailed analysis for this test, as well as for the other three B/C tests defined in the Board's rules,⁴ are provided in Appendix A.

Table 4. Smart Thermostat DR Pilot Proposed Cost-Effectiveness

Societal Test	Proposed
Lifetime Benefits	\$5,859,378
Lifetime Costs	\$2,801,686
Net Benefits	\$3,057,692
B/C Ratio	2.09

III. ESTIMATED IMPLEMENTATION SCHEDULE FOR LIMITED MODIFICATION

IPL is committed to executing the pilot outlined in this modification application. IPL proposes to implement the new budgets and goals effective December 2020 or upon Board approval. Table 5 provides a schedule of pilot implementation milestones and events.

⁴ 199 Iowa Administrative Code 35.2.

Table 5. Smart/Wi-Fi Thermostat DR 2020-2023 Pilot Milestones

Project Milestone	Estimated Date
Begin recruiting customers	Dec 2020
Begin summer 2021 DR season	June 2021
End of summer 2021 DR season	Sept 2021
Begin winter 2021/2022 DR season	Dec 2021
End winter 2021/2022 DR season	March 2022
Begin summer 2022 DR season	June 2022
End of summer 2022 DR season	Sept 2022
Begin winter 2022/2023 DR season	Nov 2022
End winter 2022/2023 DR season	March 2023
Begin summer 2023 DR season	June 2023
End of summer 2023 DR season	Sept 2023
Begin winter 2023/2024 DR season	Nov 2023
End winter 2023/2024 DR season	March 2024

IV. ANTICIPATED EFFECT OF LIMITED MODIFICATION

This section summarizes IPL's expectations for attaining its approved portfolio energy efficiency goals and implications for portfolio budgets and cost-effectiveness considering the changes proposed in this Plan modification.

A. *Proposed Impact Goals*

In Plan years 2021 through 2023, IPL's modification proposal will increase overall demand response (summer demand) reduction goals by 1.9 percent (270 MW in 2021) to 5.7 percent (2,280 MW in 2023) in each year. Reductions in IPL's winter natural gas demand are considered secondary benefits and are included in overall cost-effectiveness calculations.

B. *Approved and Proposed Budgets*

IPL's proposed modification will have limited effect on the overall electric budget in Plan years 2020 through 2023, with a total net increase of less than \$4 million.

C. *Approved and Proposed B/C Analysis*

Consistent with the Plan, IPL assessed cost-effectiveness of this proposal by valuing its gross societal benefits, as measured by IPL's avoided energy and capacity value, costs (including externalities), and the pilot's total life-cycle costs. A pilot's cost-effectiveness is determined by the net present value of its benefits and is considered cost-effective if its net societal benefits are positive; in other words, when the ratio of the net present value of the pilot's benefits as compared to costs is greater than 1.0. As a result of the proposed limited modification, IPL has decreased overall Plan cost-effectiveness as measured by the societal test from 2.99⁵ to 2.98 (See Appendix A for the approved and proposed benefit-cost analyses).

V. SUMMARY

In this Application, IPL proposes adding the Smart/Wi-Fi Thermostat DR Pilot to its Demand Response Portfolio, through a limited modification to the 2020-2023 plan. Approving IPL's request will increase customers' options to engage with a new smart energy technology that allows them to better monitor and manage their energy usage, while supporting IPL's efforts to manage peak demand in Iowa with IPL's DR portfolio and expand IPL's DR related benefits, such as increasing flexibility and capacity. This limited modification represents a prudent use of customer funds to deliver the pilot and recover the associated costs. IPL remains

⁵ In 2019, no cost effectiveness analysis was conducted to account for the changes in the September 24, 2019 approved budget. This modification accounts for these changes in both the approved and proposed budgets and resulting cost effectiveness results.

committed to growing and exceeding its Plan goals while improving and enhancing its customer offerings. IPL respectfully requests the Board approve these changes as a limited modification to its Plan for years 2020 through 2023.

APPENDIX A. PORTFOLIO BUDGET AND COST-EFFECTIVENESS RESULTS

The detailed analysis for the benefit-cost ratios for all four tests, as defined in the Board's rules, and portfolio budgets are provided in the following tables.

Table 6. Electric Plan Budget (Proposed)

Program	Plan Year					Total
	2019	2020	2021	2022	2023	
Residential Prescriptive Rebates Program	\$2,813,770	\$2,864,892	\$2,909,914	\$2,967,104	\$3,007,770	\$14,563,449
Home Energy Assessments Program	\$279,265	\$236,733	\$239,275	\$241,893	\$244,590	\$1,241,755
Be Bright Program	\$1,490,878	\$670,448	\$464,444	\$410,844	\$373,416	\$3,410,030
Appliance Recycling Program	\$1,110,509	\$1,111,133	\$1,111,776	\$1,112,438	\$1,113,121	\$5,558,978
Home Energy Reports Program	\$1,469,827	\$1,470,744	\$1,471,689	\$1,472,662	\$1,473,665	\$7,358,588
Low-Income Weatherization Program	\$305,898	\$305,995	\$306,095	\$306,198	\$306,304	\$1,530,492
Low-Income Multifamily Program	\$271,960	\$272,750	\$273,563	\$274,401	\$275,264	\$1,367,937
LivingWise (School Kits) Program	\$213,644	\$213,994	\$214,354	\$214,724	\$215,106	\$1,071,823
Nonresidential Prescriptive Rebates Program	\$3,270,574	\$3,289,302	\$3,343,106	\$3,393,744	\$3,457,156	\$16,753,883
Small Business Energy Solutions Program	\$1,471,063	\$1,473,207	\$1,465,416	\$1,467,690	\$1,470,033	\$7,347,410
Custom Solutions Program	\$7,328,500	\$7,355,803	\$7,363,926	\$7,392,893	\$7,422,728	\$36,863,850
Commercial New Construction Program	\$1,083,623	\$1,100,547	\$1,127,550	\$1,154,636	\$1,181,805	\$5,648,161
Agriculture Solutions Program	\$1,381,979	\$1,384,565	\$1,390,851	\$1,389,936	\$1,392,669	\$6,940,000
Energy Efficiency Plan	\$22,491,490	\$21,750,113	\$21,681,960	\$21,799,164	\$21,933,628	\$109,656,356
Residential Direct Load Control	\$2,687,590	\$2,689,168	\$2,682,793	\$2,184,467	\$2,186,191	\$12,430,208
Smart Thermostat Pilot (Bring Your Own Device)	NA	\$541,700	\$1,202,000	\$1,545,400	\$706,200	\$3,995,300
Nonresidential Interruptible	\$16,468,098	\$16,469,391	\$16,470,723	\$16,472,095	\$16,473,507	\$82,353,814
Demand Response Plan	\$19,155,688	\$19,700,259	\$20,355,516	\$20,201,961	\$19,365,898	\$98,779,322
Energy Awareness	\$1,321,666	\$1,331,127	\$1,340,872	\$1,350,909	\$1,361,247	\$6,705,822
Legislative Assessment	\$0	\$0	\$0	\$0	\$0	\$0
Regulatory and Next Plan	\$541,835	\$596,918	\$834,803	\$1,072,999	\$751,517	\$3,798,071
Evaluation, Measurement and Verification	\$26,399	\$1,445,711	\$486,032	\$17,363	\$17,704	\$1,993,207
Other Funding Initiatives Total	\$1,889,900	\$3,373,755	\$2,661,706	\$2,441,271	\$2,130,468	\$12,497,100
Total Plan	\$43,537,078	\$44,824,127	\$44,699,182	\$44,442,397	\$43,429,994	\$220,932,778

Table 7. Electric Plan Budget (Approved)

Program	Plan Year					Total
	2019	2020	2021	2022	2023	
Residential Prescriptive Rebates Program	\$2,813,770	\$2,864,892	\$2,909,914	\$2,967,104	\$3,007,770	\$14,563,449
Home Energy Assessments Program	\$279,265	\$236,733	\$239,275	\$241,893	\$244,590	\$1,241,755
Be Bright Program	\$1,490,878	\$670,448	\$464,444	\$410,844	\$373,416	\$3,410,030
Appliance Recycling Program	\$1,110,509	\$1,111,133	\$1,111,776	\$1,112,438	\$1,113,121	\$5,558,978
Home Energy Reports Program	\$1,469,827	\$1,470,744	\$1,471,689	\$1,472,662	\$1,473,665	\$7,358,588
Low-Income Weatherization Program	\$305,898	\$305,995	\$306,095	\$306,198	\$306,304	\$1,530,492
Low-Income Multifamily Program	\$271,960	\$272,750	\$273,563	\$274,401	\$275,264	\$1,367,937
LivingWise (School Kits) Program	\$213,644	\$213,994	\$214,354	\$214,724	\$215,106	\$1,071,823
Nonresidential Prescriptive Rebates Program	\$3,270,574	\$3,289,302	\$3,343,106	\$3,393,744	\$3,457,156	\$16,753,883
Small Business Energy Solutions Program	\$1,471,063	\$1,473,207	\$1,465,416	\$1,467,690	\$1,470,033	\$7,347,410
Custom Solutions Program	\$7,328,500	\$7,355,803	\$7,363,926	\$7,392,893	\$7,422,728	\$36,863,850
Commercial New Construction Program	\$1,083,623	\$1,100,547	\$1,127,550	\$1,154,636	\$1,181,805	\$5,648,161
Agriculture Solutions Program	\$1,381,979	\$1,384,565	\$1,390,851	\$1,389,936	\$1,392,669	\$6,940,000
Energy Efficiency Plan	\$22,491,490	\$21,750,113	\$21,681,960	\$21,799,164	\$21,933,628	\$109,656,356
Residential Direct Load Control	\$2,687,590	\$2,689,168	\$2,682,793	\$2,184,467	\$2,186,191	\$12,430,208
Nonresidential Interruptible	\$16,468,098	\$16,469,391	\$16,470,723	\$16,472,095	\$16,473,507	\$82,353,814
Demand Response Plan	\$19,155,688	\$19,158,559	\$19,153,516	\$18,656,561	\$18,659,698	\$94,784,022
Energy Awareness	\$1,321,666	\$1,331,127	\$1,340,872	\$1,350,909	\$1,361,247	\$6,705,822
Legislative Assessment	\$0	\$0	\$0	\$0	\$0	\$0
Regulatory and Next Plan	\$541,835	\$596,918	\$834,803	\$1,072,999	\$751,517	\$3,798,071
Evaluation, Measurement and Verification	\$26,399	\$1,445,711	\$486,032	\$17,363	\$17,704	\$1,993,207
Other Funding Initiatives Total	\$1,889,900	\$3,373,755	\$2,661,706	\$2,441,271	\$2,130,468	\$12,497,100
Total Plan	\$43,537,078	\$44,282,427	\$43,497,182	\$42,896,997	\$42,723,794	\$216,937,478

Table 8. Total Plan Budget (Proposed)

Program	Plan Year					Total
	2019	2020	2021	2022	2023	
Residential Prescriptive Rebates Program	\$3,284,566	\$3,331,557	\$3,375,119	\$3,432,991	\$3,476,446	\$16,900,679
Home Energy Assessments Program	\$308,595	\$261,192	\$263,868	\$266,624	\$269,463	\$1,369,742
Be Bright Program	\$1,490,878	\$670,448	\$464,444	\$410,844	\$373,416	\$3,410,030
Appliance Recycling Program	\$1,110,509	\$1,111,133	\$1,111,776	\$1,112,438	\$1,113,121	\$5,558,978
Home Energy Reports Program	\$1,547,186	\$1,548,152	\$1,549,147	\$1,550,171	\$1,551,226	\$7,745,882
Low-Income Weatherization Program	\$2,254,519	\$2,246,612	\$2,332,446	\$2,049,663	\$2,050,087	\$10,933,327
Low-Income Multifamily Program	\$305,782	\$306,660	\$307,564	\$308,495	\$309,453	\$1,537,953
LivingWise (School Kits) Program	\$313,349	\$313,815	\$314,295	\$314,789	\$315,299	\$1,571,548
Nonresidential Prescriptive Rebates Program	\$3,426,765	\$3,445,856	\$3,500,035	\$3,551,059	\$3,614,868	\$17,538,583
Small Business Energy Solutions Program	\$1,471,063	\$1,473,207	\$1,465,416	\$1,467,690	\$1,470,033	\$7,347,410
Custom Solutions Program	\$7,618,393	\$7,647,039	\$7,656,544	\$7,686,935	\$7,718,237	\$38,327,147
Commercial New Construction Program	\$1,083,623	\$1,100,547	\$1,127,550	\$1,154,636	\$1,181,805	\$5,648,161
Agriculture Solutions Program	\$1,381,979	\$1,384,565	\$1,390,851	\$1,389,936	\$1,392,669	\$6,940,000
Energy Efficiency Plan	\$25,597,206	\$24,840,784	\$24,859,055	\$24,696,270	\$24,836,124	\$124,829,439
Residential Direct Load Control	\$2,687,590	\$2,689,168	\$2,682,793	\$2,184,467	\$2,186,191	\$12,430,208
Smart Thermostat Pilot (Bring Your Own Device)	NA	\$541,700	\$1,202,000	\$1,545,400	\$706,200	\$3,995,300
Nonresidential Interruptible	\$16,468,098	\$16,469,391	\$16,470,723	\$16,472,095	\$16,473,507	\$82,353,814
Demand Response Plan	\$19,155,688	\$19,700,259	\$20,355,516	\$20,201,961	\$19,365,898	\$98,779,322
Energy Awareness	\$1,387,464	\$1,397,423	\$1,407,681	\$1,418,246	\$1,429,129	\$7,039,944
Legislative Assessment	\$0	\$0	\$0	\$0	\$0	\$0
Regulatory and Next Plan	\$578,774	\$649,387	\$910,319	\$1,171,578	\$833,175	\$4,143,233
Evaluation, Measurement and Verification	\$27,946	\$1,521,274	\$511,612	\$18,961	\$19,320	\$2,099,113
Other Funding Initiatives Total	\$1,994,184	\$3,568,084	\$2,829,612	\$2,608,785	\$2,281,624	\$13,282,290
Total Plan	\$46,747,078	\$48,109,127	\$48,044,182	\$47,507,017	\$46,483,646	\$236,891,051

Table 9. Total Plan Budget (Approved)

Program	Plan Year					Total
	2019	2020	2021	2022	2023	
Residential Prescriptive Rebates Program	\$3,284,566	\$3,331,557	\$3,375,119	\$3,432,991	\$3,476,446	\$16,900,679
Home Energy Assessments Program	\$308,595	\$261,192	\$263,868	\$266,624	\$269,463	\$1,369,742
Be Bright Program	\$1,490,878	\$670,448	\$464,444	\$410,844	\$373,416	\$3,410,030
Appliance Recycling Program	\$1,110,509	\$1,111,133	\$1,111,776	\$1,112,438	\$1,113,121	\$5,558,978
Home Energy Reports Program	\$1,547,186	\$1,548,152	\$1,549,147	\$1,550,171	\$1,551,226	\$7,745,882
Low-Income Weatherization Program	\$2,254,519	\$2,246,612	\$2,332,446	\$2,049,663	\$2,050,087	\$10,933,327
Low-Income Multifamily Program	\$305,782	\$306,660	\$307,564	\$308,495	\$309,453	\$1,537,953
LivingWise (School Kits) Program	\$313,349	\$313,815	\$314,295	\$314,789	\$315,299	\$1,571,548
Nonresidential Prescriptive Rebates Program	\$3,426,765	\$3,445,856	\$3,500,035	\$3,551,059	\$3,614,868	\$17,538,583
Small Business Energy Solutions Program	\$1,471,063	\$1,473,207	\$1,465,416	\$1,467,690	\$1,470,033	\$7,347,410
Custom Solutions Program	\$7,618,393	\$7,647,039	\$7,656,544	\$7,686,935	\$7,718,237	\$38,327,147
Commercial New Construction Program	\$1,083,623	\$1,100,547	\$1,127,550	\$1,154,636	\$1,181,805	\$5,648,161
Agriculture Solutions Program	\$1,381,979	\$1,384,565	\$1,390,851	\$1,389,936	\$1,392,669	\$6,940,000
Energy Efficiency Plan	\$25,597,206	\$24,840,784	\$24,859,055	\$24,696,270	\$24,836,124	\$124,829,439
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Nonresidential Interruptible	\$16,468,098	\$16,469,391	\$16,470,723	\$16,472,095	\$16,473,507	\$82,353,814
Demand Response Plan	\$19,155,688	\$19,158,559	\$19,153,516	\$18,656,561	\$18,659,698	\$94,784,022
Energy Awareness	\$1,387,464	\$1,397,423	\$1,407,681	\$1,418,246	\$1,429,129	\$7,039,944
Legislative Assessment	\$0	\$0	\$0	\$0	\$0	\$0
Regulatory and Next Plan	\$578,774	\$649,387	\$910,319	\$1,171,578	\$833,175	\$4,143,233
Evaluation, Measurement and Verification	\$27,946	\$1,521,274	\$511,612	\$18,961	\$19,320	\$2,099,113
Other Funding Initiatives Total	\$1,994,184	\$3,568,084	\$2,829,612	\$2,608,785	\$2,281,624	\$13,282,290
Total Plan	\$46,747,078	\$47,567,427	\$46,842,182	\$45,961,617	\$45,777,446	\$232,895,751

Table 10. Plan Cost-Effectiveness Results by Program/Pilot (Proposed)

Programs	Total					Electric Program					Natural Gas Program				
	Utility	Participant	Ratepayer	Societal	Total Resource	Utility	Participant	Ratepayer	Societal	Total Resource	Utility	Participant	Ratepayer	Societal	Total Resource
Energy Efficiency Portfolio	3.31	3.26	0.83	2.85	2.61	3.63	3.37	0.84	3.01	2.75	0.92	1.25	0.71	1.09	1.02
Residential Prescriptive	2.05	1.22	0.80	1.30	1.18	2.07	1.30	0.77	1.29	1.18	1.95	0.75	1.19	1.33	1.23
Home Energy Assessments	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Be Bright	4.47	6.51	0.83	4.17	3.91	4.47	6.51	0.83	4.17	3.91	N/A	N/A	N/A	N/A	N/A
Appliance Recycling	2.17	32.10	0.59	3.35	3.06	2.17	32.10	0.59	3.35	3.06	N/A	N/A	N/A	N/A	N/A
Low-Income Multifamily	0.87	7.24	0.46	1.14	1.05	0.95	7.65	0.47	1.22	1.12	0.22	2.39	0.20	0.42	0.40
Home Energy Reports	0.28	N/A	0.17	0.32	0.29	0.30	N/A	0.17	0.33	0.30	0.00	N/A	0.00	0.00	0.00
Low-Income Weatherization	0.23	N/A	0.20	0.37	0.35	0.50	N/A	0.25	0.78	0.71	0.19	N/A	0.18	0.30	0.28
LivingWise	1.56	N/A	0.61	2.64	2.47	1.84	N/A	0.59	2.87	2.66	0.96	N/A	0.69	2.13	2.05
Nonresidential Prescriptive	4.94	2.71	1.09	3.38	3.10	5.05	2.77	1.08	3.43	3.15	2.35	0.89	1.39	1.80	1.68
Small Business Energy Solutions	3.47	4.27	0.93	3.74	3.41	3.47	4.27	0.93	3.74	3.41	N/A	N/A	N/A	N/A	N/A
Custom Solutions	3.85	3.89	0.80	3.53	3.21	3.86	3.98	0.78	3.54	3.22	3.55	1.50	1.72	3.24	3.01
Commercial New Construction	8.59	4.37	0.96	5.20	4.72	8.59	4.37	0.96	5.20	4.72	N/A	N/A	N/A	N/A	N/A
Agriculture Solutions	4.39	2.23	0.83	2.37	2.18	4.39	2.23	0.83	2.37	2.18	N/A	N/A	N/A	N/A	N/A
Demand Response Portfolio	2.67	1.36	2.63	3.85	3.50	2.67	1.36	2.63	3.85	3.50	N/A	N/A	N/A	N/A	N/A
Residential Direct Load Control	3.10	1.34	3.08	4.07	3.70	3.10	1.34	3.08	4.07	3.70	N/A	N/A	N/A	N/A	N/A

Programs	Total					Electric Program					Natural Gas Program				
	Utility	Participant	Ratepayer	Societal	Total Resource	Utility	Participant	Ratepayer	Societal	Total Resource	Utility	Participant	Ratepayer	Societal	Total Resource
Smart Thermostat Pilot (Bring Your Own Device)	1.40	2.64	1.40	2.09	1.90	1.40	2.64	1.40	2.09	1.90	N/A	N/A	N/A	N/A	N/A
Nonresidential Interruptible	2.66	1.35	2.62	3.90	3.54	2.66	1.35	2.62	3.90	3.54	N/A	N/A	N/A	N/A	N/A
Other Funding Initiatives	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Non-Targeted Energy Awareness	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Trees	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Dealer Network	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Legislative Assessment	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Regulatory and Next Plan	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
EM&V	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Total	2.87	2.66	1.09	2.98	2.72	3.01	2.71	1.11	3.11	2.83	0.87	1.26	0.68	1.05	0.98

Table 11. Plan Cost-Effectiveness Results by Program (Approved)

Programs	Total					Electric Program					Natural Gas Program				
	Utility	Participant	Ratepayer	Societal	Total Resource	Utility	Participant	Ratepayer	Societal	Total Resource	Utility	Participant	Ratepayer	Societal	Total Resource
Energy Efficiency Portfolio	3.31	3.26	0.83	2.85	2.61	3.63	3.37	0.84	3.01	2.75	0.92	1.25	0.71	1.09	1.02
Residential Prescriptive	2.05	1.22	0.80	1.30	1.18	2.07	1.30	0.77	1.29	1.18	1.95	0.75	1.19	1.33	1.23
Home Energy Assessments	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Be Bright	4.47	6.51	0.83	4.17	3.91	4.47	6.51	0.83	4.17	3.91	N/A	N/A	N/A	N/A	N/A
Appliance Recycling	2.17	32.10	0.59	3.35	3.06	2.17	32.10	0.59	3.35	3.06	N/A	N/A	N/A	N/A	N/A

Programs	Total					Electric Program					Natural Gas Program				
	Utility	Participant	Ratepayer	Societal	Total Resource	Utility	Participant	Ratepayer	Societal	Total Resource	Utility	Participant	Ratepayer	Societal	Total Resource
Low-Income Multifamily	0.87	7.24	0.46	1.14	1.05	0.95	7.65	0.47	1.22	1.12	0.22	2.39	0.20	0.42	0.40
Home Energy Reports	0.28	N/A	0.17	0.32	0.29	0.30	N/A	0.17	0.33	0.30	0.00	N/A	0.00	0.00	0.00
Low-Income Weatherization	0.23	N/A	0.20	0.37	0.35	0.50	N/A	0.25	0.78	0.71	0.19	N/A	0.18	0.30	0.28
LivingWise	1.56	N/A	0.61	2.64	2.47	1.84	N/A	0.59	2.87	2.66	0.96	N/A	0.69	2.13	2.05
Nonresidential Prescriptive	4.94	2.71	1.09	3.38	3.10	5.05	2.77	1.08	3.43	3.15	2.35	0.89	1.39	1.80	1.68
Small Business Energy Solutions	3.47	4.27	0.93	3.74	3.41	3.47	4.27	0.93	3.74	3.41	N/A	N/A	N/A	N/A	N/A
Custom Solutions	3.85	3.89	0.80	3.53	3.21	3.86	3.98	0.78	3.54	3.22	3.55	1.50	1.72	3.24	3.01
Commercial New Construction	8.59	4.37	0.96	5.20	4.72	8.59	4.37	0.96	5.20	4.72	N/A	N/A	N/A	N/A	N/A
Agriculture Solutions	4.39	2.23	0.83	2.37	2.18	4.39	2.23	0.83	2.37	2.18	N/A	N/A	N/A	N/A	N/A
Demand Response Portfolio	2.72	1.35	2.68	3.92	3.57	2.72	1.35	2.68	3.92	3.57	N/A	N/A	N/A	N/A	N/A
Residential Direct Load Control	3.10	1.34	3.08	4.07	3.70	3.10	1.34	3.08	4.07	3.70	N/A	N/A	N/A	N/A	N/A
Nonresidential Interruptible	2.66	1.35	2.62	3.90	3.54	2.66	1.35	2.62	3.90	3.54	N/A	N/A	N/A	N/A	N/A
Other Funding Initiatives	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Non-Targeted Energy Awareness	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Trees	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Dealer Network	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Legislative Assessment	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Regulatory and Next Plan	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
EM&V	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	N/A	0.00	0.00	0.00
Total	2.89	2.66	1.09	2.99	2.73	3.04	2.71	1.10	3.12	2.84	0.87	1.26	0.68	1.05	0.98

Table 12. Total Plan Benefits and Costs (Proposed)

Benefit/Cost Component	Plan Year					Total
	2019	2020	2021	2022	2023	
Electric Savings (kWh)	128,529,457	114,712,093	118,938,700	122,351,049	126,247,355	610,778,653
Energy Efficiency Capacity Savings (kW)	22,060	18,853	19,106	19,338	19,516	NA ¹
Demand Response Capacity Savings (kW)	265,000	265,000	270,000	275,000	280,000	NA ¹
Natural Gas Savings (therms)	491,914	491,172	489,836	490,847	492,540	2,456,309
Capacity Savings (therms)	5,831	5,819	5,802	5,818	5,846	NA ¹
Participant Cost Net of Incentives (\$)	\$12,397,156	\$12,107,483	\$12,436,731	\$14,564,755	\$15,032,841	\$66,538,966
Direct Utility Costs (\$)	\$46,747,078	\$48,109,126	\$48,044,182	\$47,507,017	\$46,483,646	\$236,891,049
Planning and Design	\$403,000	\$403,000	\$392,000	\$442,000	\$442,000	\$2,082,000
Administration	\$10,819,336	\$12,823,292	\$12,206,871	\$11,738,451	\$10,721,612	\$58,309,562
Advertising and Promotion	\$1,794,500	\$1,899,500	\$1,909,500	\$1,889,500	\$1,889,500	\$9,382,500
Customer Incentive	\$29,599,363	\$29,681,522	\$30,224,919	\$30,163,332	\$30,194,600	\$149,863,736
Equipment Cost	\$475,346	\$475,346	\$475,346	\$475,346	\$475,346	\$2,376,730
Installation Cost	\$3,441,033	\$2,611,966	\$2,681,046	\$2,673,888	\$2,651,088	\$14,059,021
Review and Assessment	\$214,500	\$214,500	\$154,500	\$124,500	\$109,500	\$817,500
Total Societal Cost	\$60,738,178	\$61,818,848	\$61,997,718	\$62,071,772	\$61,516,487	\$308,143,003

¹ Demand reduction is not cumulative.

² Does not include natural gas demand response capacity savings.

Totals may not sum due to rounding.

Table 13. Total Plan Benefits and Costs (Approved)

Benefit/Cost Component	Plan Year					Total
	2019	2020	2021	2022	2023	
Electric Savings (kWh)	128,529,457	114,712,093	118,938,700	122,351,049	126,247,355	610,778,653
Energy Efficiency Capacity Savings (kW)	22,060	18,853	19,106	19,338	19,516	NA ¹
Demand Response Capacity Savings (kW)	265,000	265,000	265,000	265,000	265,000	NA ¹
Natural Gas Savings (therms)	491,914	491,172	489,836	490,847	492,540	2,456,309
Capacity Savings (therms)	5,831	5,819	5,802	5,818	5,846	NA ¹
Participant Cost Net of Incentives (\$)	13,991,101	13,729,711	14,316,353	\$14,949,888	\$15,234,312	\$72,221,365
Direct Utility Costs (\$)	\$46,747,078	\$47,567,427	\$46,842,182	\$45,961,617	\$45,777,446	\$232,895,750
Planning and Design	\$403,000	\$403,000	\$392,000	\$442,000	\$442,000	\$2,082,000
Administration	\$10,819,336	\$12,406,592	\$11,601,471	\$10,908,051	\$10,660,412	\$56,395,862
Advertising and Promotion	\$1,794,500	\$1,794,500	\$1,769,500	\$1,769,500	\$1,769,500	\$8,897,500
Customer Incentive	\$29,599,363	\$29,661,522	\$29,768,319	\$29,568,332	\$29,669,600	\$148,267,137
Equipment Cost	\$475,346	\$475,346	\$475,346	\$475,346	\$475,346	\$2,376,731
Installation Cost	\$3,441,032	\$2,611,966	\$2,681,045	\$2,673,888	\$2,651,088	\$14,059,020
Review and Assessment	\$214,500	\$214,500	\$154,500	\$124,500	\$109,500	\$817,500
Total Societal Cost	\$60,738,178	\$61,297,138	\$61,158,535	\$60,911,505	\$61,011,758	\$305,117,115

¹ Demand reduction is not cumulative.
Totals may not sum due to rounding.

Table 14. Total Plan Cost-Effectiveness (Proposed)

	Utility	Participant	Ratepayer	Societal	Total Resource
Net Present Value Benefits (\$)	\$619,049,742	\$505,925,995	\$621,842,883	\$866,241,217	\$790,766,511
Net Present Value Costs (\$)	\$215,585,216	\$189,878,219	\$569,226,040	\$290,766,271	\$290,766,271
Benefit/Cost Ratio	2.87	2.66	1.09	2.98	2.72

Table 15. Total Plan Cost-Effectiveness (Approved)

	Utility	Participant	Ratepayer	Societal	Total Resource
Net Present Value Benefits (\$)	\$614,308,470	\$504,610,060	\$617,101,611	\$860,381,838	\$785,439,499
Net Present Value Costs (\$)	\$212,201,899	\$189,379,624	\$565,842,723	\$287,964,585	\$287,964,585
Benefit/Cost Ratio	2.89	2.66	1.09	2.99	2.73