

Appendix 1

Cost-Effectiveness Analysis



MEMORANDUM

To: Nancy Goddard and Peter Schaffer, Pacific Power
From: Dimitry Burdjalov, Andy Hudson, Dylan Royalty, Elizabeth Applegate, AEG
Date: September 12, 2023
Re: Washington Portfolio Level Program Cost-Effectiveness Analysis – 2024-2025 Biennium

AEG estimated the cost-effectiveness of Pacific Power’s overall energy efficiency portfolio and individual programs in the state of Washington based on Program Year (PY) 2024 and PY2025 costs and savings estimates provided by Pacific Power.¹ The portfolio passes the following cost effectiveness tests: Total Resource Cost Test (TRC), the PacifiCorp Total Resource Cost Test (PTRC), the Utility Cost Test (UCT), and the Participant Cost Test (PCT).

The memo provides analysis inputs and results in the following tables:

- Table 1: Utility Inputs
- Table 2: Portfolio-Level Costs, Nominal - PY2024 and PY2025
- Table 3: Program Costs, Nominal - PY2024 and PY2025
- Table 4: Savings by Program - PY2024 and PY2025
- Table 5: Portfolio-Level Benefit/Cost Ratios - PY2024 and PY2025
- Table 6: Total Portfolio Cost-Effectiveness Results - PY2024 and PY2025
- Table 7: Total Portfolio with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 8: Total Portfolio Cost-Effectiveness Results - PY2024 and PY2025
- Table 9: Total Portfolio with NEIs Cost-Effectiveness Results - PY2024 and PY2025 (Including NEEA)
- Table 10: Benefit/Cost Ratios by Program - PY2024 and PY2025
- Table 11: Home Energy Savings Cost-Effectiveness Results - PY2024 and PY2025
- Table 12: Home Energy Savings with NEIs Cost-Effectiveness Results - PY2024 and PY2025

¹ Consistent with Section 480-109-100 (10) (b) of the Washington Administrative Code, the Low-Income Weatherization program is excluded from this analysis.



- Table 13: Home Energy Reports Cost-Effectiveness Results - PY2024 and PY2025
- Table 14: Wattsmart Business Cost-Effectiveness Results - PY2024 and PY2025
- Table 15: Wattsmart Business with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 16: NEEA Cost-Effectiveness Results - PY2024 and PY2025
- Table 17: Home Energy Savings Non-Energy Impacts - PY2024 and PY2025
- Table 18: Wattsmart Business Non-Energy Impacts - PY2024 and PY2025

The following assumptions were utilized in the analysis:

- **Avoided Costs:** derived from PacifiCorp’s 2023 Integrated Resource Plan (IRP) Preferred Portfolio “W10 SC CETA”, converted into annual values using load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, non-energy impacts (NEIs), measure lives, incentive levels, program delivery, and portfolio costs were based on estimates provided by PacifiCorp.
- **Net-to-Gross (NTG):** ratios are assumed to be 1.0, consistent with condition (8)(a) to Order 01 in Docket UE-152-072.
- **Retail Rates:** 2022 rates provided by PacifiCorp and escalated by inflation for future years.

The following tables summarize cost-effectiveness assumptions and results for the Washington portfolio and associated programs.

Table 1: Utility Inputs

Parameter	Value
Discount Rate	6.77%
Residential Line Loss	7.68%
Commercial Line Loss	7.60%
Industrial Line Loss	6.82%
Irrigation Line Loss	7.68%
Residential Energy Rate (\$/kWh)	\$0.094
Commercial Energy Rate (\$/kWh)	\$0.091
Industrial Energy Rate (\$/kWh)	\$0.075
Irrigation Energy Rate (\$/kWh)	\$0.089
Inflation Rate ^{1,2}	2.27%

² Future rates determined using a 2.27% annual escalator.



Table 2: Portfolio-Level Costs, Nominal - PY2024 and PY2025

Category	PY2024	PY2025
Be wattsmart, Begin at Home	\$71,758	\$73,552
Customer Outreach/Communication	\$250,000	\$250,000
Program Evaluations (& Savings Verification)	\$293,885	\$167,584
Potential Study Update/Analysis	\$120,000	\$25,000
System Support	\$68,416	\$68,416
End Use Load Research	\$20,700	\$43,200
RTF Funding	\$50,688	\$50,688
Total	\$875,447	\$678,440

Table 3: Program Costs, Nominal - PY2024 and PY2025

Program	Program Delivery	Utility Admin	Incentives	Total Utility Budget	Gross Customer Costs	NEIs
Home Energy Savings	\$8,925,705	\$174,985	\$5,488,136	\$14,588,826	\$13,926,772	\$281,758
Home Energy Reports	\$573,502	\$95,027	\$0	\$668,529	\$0	\$0
Wattsmart Business	\$8,225,691	\$1,047,276	\$18,153,713	\$27,426,680	\$18,554,282	\$1,156,855
NEEA	\$1,921,127	\$18,404	\$0	\$1,939,531	\$0	\$0
Total (excluding Portfolio-Level)	\$19,646,025	\$1,335,692	\$23,641,849	\$44,623,565	\$32,481,053	\$1,438,613

Table 4: Savings by Program - PY2024 and PY2025

Program	Gross kWh Savings at Site	Realization Rate	Adjusted Gross kWh Savings at Site	Net to Gross Ratio	Net kWh Savings at Site	Measure Life
Home Energy Savings	9,437,528	93%	8,799,296	100%	8,799,296	18
Home Energy Reports	7,953,000	100%	7,953,000	100%	7,953,000	1
Wattsmart Business	63,012,935	98%	61,707,926	100%	61,707,926	12
NEEA ³	10,131,744	100%	10,131,744	100%	10,131,744	15
Total Program	90,535,208	98%	88,591,967	100%	88,591,967	12

³ NEEA savings are adjusted to exclude C&S outside CPA potential consistent with PY2024 and PY2025 Business Plan



Table 5: Portfolio-Level Benefit/Cost Ratios - PY2024 and PY2025

Program	PTRC	TRC	UCT	PCT	RIM
Total Portfolio	1.17	1.07	1.28	2.69	0.52
Total Portfolio with NEIs	1.39	1.28	1.28	3.05	0.52
Total Portfolio with NEEA	1.31	1.19	1.42	3.04	0.54
Total Portfolio with NEEA and NEIs	1.52	1.40	1.42	3.40	0.54

Table 6: Total Portfolio Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0884	\$51,335,786	\$60,225,312	\$8,889,526	1.17
Total Resource Cost Test (TRC) No Adder	\$0.0884	\$51,335,786	\$54,750,284	\$3,414,498	1.07
Utility Cost Test (UCT)	\$0.0737	\$42,792,985	\$54,750,284	\$11,957,299	1.28
Participant Cost Test (PCT)		\$31,415,405	\$84,591,888	\$53,176,484	2.69
Rate Impact Test (RIM)		\$104,512,270	\$54,750,284	(\$49,761,986)	0.52
Lifecycle Revenue Impacts (\$/kWh)					\$0.0015527
Discounted Participant Payback (years)					4.09

Table 7: Total Portfolio with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0884	\$51,335,786	\$71,299,212	\$19,963,427	1.39
Total Resource Cost Test (TRC) No Adder	\$0.0884	\$51,335,786	\$65,824,184	\$14,488,398	1.28
Utility Cost Test (UCT)	\$0.0737	\$42,792,985	\$54,750,284	\$11,957,299	1.28
Participant Cost Test (PCT)		\$31,415,405	\$95,665,789	\$64,250,384	3.05
Rate Impact Test (RIM)		\$104,512,270	\$54,750,284	(\$49,761,986)	0.52
Lifecycle Revenue Impacts (\$/kWh)					\$0.0015527
Discounted Participant Payback (years)					3.61



Table 8: Total Portfolio Cost-Effectiveness Results - PY2024 and PY2025 (Including NEEA)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0786	\$53,212,581	\$69,826,153	\$16,613,572	1.31
Total Resource Cost Test (TRC) No Adder	\$0.0786	\$53,212,581	\$63,478,321	\$10,265,740	1.19
Utility Cost Test (UCT)	\$0.0660	\$44,669,780	\$63,478,321	\$18,808,541	1.42
Participant Cost Test (PCT)		\$31,415,405	\$95,639,854	\$64,224,449	3.04
Rate Impact Test (RIM)		\$117,437,030	\$63,478,321	(\$53,958,709)	0.54
Lifecycle Revenue Impacts (\$/kWh)					\$0.0017447
Discounted Participant Payback (years)					3.73

Table 9: Total Portfolio with NEIs Cost-Effectiveness Results - PY2024 and PY2025 (Including NEEA)

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0786	\$53,212,581	\$80,900,053	\$27,687,472	1.52
Total Resource Cost Test (TRC) No Adder	\$0.0786	\$53,212,581	\$74,552,221	\$21,339,640	1.40
Utility Cost Test (UCT)	\$0.0660	\$44,669,780	\$63,478,321	\$18,808,541	1.42
Participant Cost Test (PCT)		\$31,415,405	\$106,713,754	\$75,298,349	3.40
Rate Impact Test (RIM)		\$117,437,030	\$63,478,321	(\$53,958,709)	0.54
Lifecycle Revenue Impacts (\$/kWh)					\$0.0017447
Discounted Participant Payback (years)					3.33

Table 10: Benefit/Cost Ratios by Program - PY2024 and PY2025

Program	PTRC	TRC	UCT	PCT	RIM
Home Energy Savings	0.38	0.34	0.54	1.17	0.31
Home Energy Savings with NEIs	0.51	0.48	0.54	1.40	0.31
Home Energy Reports	1.65	1.50	1.50	N/A	0.68
Wattsmart Business	1.88	1.71	1.74	3.79	0.60
Wattsmart Business with NEIs	2.18	2.01	1.74	4.24	0.60
NEEA	5.12	4.65	4.65	N/A	0.68



Table 11: Home Energy Savings Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2494	\$22,249,652	\$8,403,105	(\$13,846,547)	0.38
Total Resource Cost Test (TRC) No Adder	\$0.2494	\$22,249,652	\$7,639,186	(\$14,610,466)	0.34
Utility Cost Test (UCT)	\$0.1580	\$14,095,182	\$7,639,186	(\$6,455,996)	0.54
Participant Cost Test (PCT)		\$13,457,070	\$15,778,399	\$2,321,329	1.17
Rate Impact Test (RIM)		\$24,570,981	\$7,639,186	(\$16,931,795)	0.31
Lifecycle Revenue Impacts (\$/kWh)					\$0.0003650
Discounted Participant Payback (years)					14.33

Table 12: Home Energy Savings with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2494	\$22,249,652	\$11,420,721	(\$10,828,931)	0.51
Total Resource Cost Test (TRC) No Adder	\$0.2494	\$22,249,652	\$10,656,802	(\$11,592,850)	0.48
Utility Cost Test (UCT)	\$0.1580	\$14,095,182	\$7,639,186	(\$6,455,996)	0.54
Participant Cost Test (PCT)		\$13,457,070	\$18,796,015	\$5,338,945	1.40
Rate Impact Test (RIM)		\$24,570,981	\$7,639,186	(\$16,931,795)	0.31
Lifecycle Revenue Impacts (\$/kWh)					\$0.0003650
Discounted Participant Payback (years)					12.26

Table 13: Home Energy Reports Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0839	\$647,070	\$1,064,554	\$417,484	1.65
Total Resource Cost Test (TRC) No Adder	\$0.0839	\$647,070	\$967,776	\$320,707	1.50
Utility Cost Test (UCT)	\$0.0839	\$647,070	\$967,776	\$320,707	1.50
Participant Cost Test (PCT)		\$0	\$769,993	\$769,993	n/a
Rate Impact Test (RIM)		\$1,417,063	\$967,776	(\$449,287)	0.68
Lifecycle Revenue Impacts (\$/kWh)					\$0.0001733
Discounted Participant Payback (years)					0.00



Table 14: Wattsmart Business Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0557	\$26,928,195	\$50,757,653	\$23,829,459	1.88
Total Resource Cost Test (TRC) No Adder	\$0.0557	\$26,928,195	\$46,143,321	\$19,215,127	1.71
Utility Cost Test (UCT)	\$0.0549	\$26,539,864	\$46,143,321	\$19,603,458	1.74
Participant Cost Test (PCT)		\$17,958,335	\$68,043,497	\$50,085,162	3.79
Rate Impact Test (RIM)		\$77,013,357	\$46,143,321	(\$30,870,035)	0.60
Lifecycle Revenue Impacts (\$/kWh)					\$0.0015705
Discounted Participant Payback (years)					3.00

Table 15: Wattsmart Business with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0557	\$26,928,195	\$58,813,937	\$31,885,743	2.18
Total Resource Cost Test (TRC) No Adder	\$0.0557	\$26,928,195	\$54,199,605	\$27,271,411	2.01
Utility Cost Test (UCT)	\$0.0549	\$26,539,864	\$46,143,321	\$19,603,458	1.74
Participant Cost Test (PCT)		\$17,958,335	\$76,099,781	\$58,141,446	4.24
Rate Impact Test (RIM)		\$77,013,357	\$46,143,321	(\$30,870,035)	0.60
Lifecycle Revenue Impacts (\$/kWh)					\$0.0015705
Discounted Participant Payback (years)					2.62

Table 16: NEEA Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0195	\$1,876,795	\$9,600,841	\$7,724,046	5.12
Total Resource Cost Test (TRC) No Adder	\$0.0195	\$1,876,795	\$8,728,037	\$6,851,242	4.65
Utility Cost Test (UCT)	\$0.0195	\$1,876,795	\$8,728,037	\$6,851,242	4.65
Participant Cost Test (PCT)		\$0	\$11,047,965	\$11,047,965	N/A
Rate Impact Test (RIM)		\$12,924,760	\$8,728,037	(\$4,196,723)	0.68
Lifecycle Revenue Impacts (\$/kWh)					\$0.0002504
Discounted Participant Payback (years)					0.00



Table 17: Home Energy Savings Non-Energy Impacts - PY2024 and PY2025

Measure Category	Annual Non-Energy Impacts per Measure	Total Installs	Measure Life	Total Present Value NEIs
Electronics	\$3.04	120	9	\$2,480
Appliances	\$16.70	171	14	\$26,135
HVAC	\$31.80	6,728	15	\$2,207,678
Water Heating	\$3.46	75	13	\$2,259
Building Shell	\$0.10	540,091	45	\$739,751
Lighting	\$1.34	9,421	3	\$34,331

Table 18: Wattsmart Business Non-Energy Impacts - PY2024 and PY2025

Sector	Measure	Annual Non-Energy Impacts per Measure	Total Installs	Measure Life	Total Present Value NEIs
Commercial	Lighting	\$3,949	2	8	\$53,725
Commercial	Adaptive Refrigeration Control	\$1,090	2	12	\$17,824
Commercial	Additional Measures	\$9,883	2	15	\$188,862
Commercial	Compressed Air	\$2,727	2	15	\$51,711
Commercial	Energy Management	\$114,651	2	3	\$624,752
Commercial	Fast Acting Doors	\$1,198	2	8	\$14,836
Commercial	HVAC	\$2,320	4	14	\$78,937
Commercial	Motors	\$3,726	2	15	\$71,203
Commercial	Refrigeration	\$107,793	2	14	\$1,976,390
Commercial	Wastewater	\$9,883	2	15	\$188,862
Commercial	Lighting	\$156,721	2	12	\$2,604,592
Commercial	Anti-Sweat Heater Control, SMB	\$21	2	12	\$353
Commercial	DI HPWH, SMB	\$23	2	18	\$487
Commercial	ECM, SMB	\$97	2	15	\$1,855
Commercial	Lighting	\$6,914	2	12	\$114,847
Commercial	Small DHP, SMB	\$88	2	15	\$1,678
Industrial	Additional Measures	\$9,060	2	15	\$173,123
Industrial	Compressed Air	\$2,727	2	14	\$50,372
Industrial	Custom Capital Projects	\$5,589	2	15	\$106,714
Industrial	Energy Management	\$48,733	2	3	\$265,557
Industrial	Motors	\$2,454	4	14	\$92,328
Industrial	Refrigeration	\$9,582	2	14	\$175,679
Industrial	Lighting	\$67,166	2	12	\$1,116,254
Irrigation	Drain for wheel line, hand line, portable main line, pivot, or linear	\$127	2	6	\$1,261
Irrigation	Gasket for wheel line, hand line, or portable main line	\$546	2	6	\$5,420



Irrigation	Impact sprinkler, New or Rebuilt	\$626	2	6	\$7,032
Irrigation	Irrigation Pump VFD	\$1,386	2	10	\$20,332
Irrigation	Nozzle	\$132	2	6	\$1,310
Irrigation	Rotating sprinkler	\$626	2	6	\$7,032
Irrigation	Sprinkler Package - replace MESA	\$3,719	2	6	\$41,778
Irrigation	Wheel line leveler	\$95	2	7	\$1,180



MEMORANDUM

To: Nancy Goddard and Peter Schaffer, Pacific Power
From: Dimitry Burdjalov, Andy Hudson, Dylan Royalty, Elizabeth Applegate, AEG
Date: September 12, 2023
Re: Washington Wattsmart Business Program Cost-Effectiveness Analysis – 2024-2025 Biennium

AEG estimated the cost-effectiveness of Pacific Power’s Wattsmart Business Program in the state of Washington based on Program Year (PY) 2024 and PY2025 costs and savings estimates provided by Pacific Power. This memo provides cost-effectiveness results for the Wattsmart Business program. The program passes the following cost effectiveness tests: Total Resource Cost Test (TRC), the PacifiCorp Total Resource Cost Test (PTRC), the Utility Cost Test (UCT), and the Participant Cost Test (PCT).

The memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
- Table 2: Annual Program Costs, Nominal - PY2024 and PY2025
- Table 3: Annual Savings - PY2024 and PY2025
- Table 4: Benefit/Cost Ratios by Delivery Channel and Measure Category - PY2024 and PY2025
- Table 5: Wattsmart Business Program Cost-Effectiveness Results - PY2024 and PY2025
- Table 6: Midstream Cost-Effectiveness Results - PY2024 and PY2025
- Table 7: Small Business Cost-Effectiveness Results - PY2024 and PY2025
- Table 8: Cascade Trade Ally/Facilitation Cost-Effectiveness Results - PY2024 and PY2025
- Table 9: Nexant Trade Ally Cost-Effectiveness Results - PY2024 and PY2025
- Table 10: Midstream - Lighting (without NEIs) Cost-Effectiveness Results - PY2024 and PY2025
- Table 11: Small Business – Anti-Sweat Heater Control, SMB Cost-Effectiveness Results - PY2024 and PY2025
- Table 12: Small Business – DI HPWH, SMB Cost-Effectiveness Results - PY2024 and PY2025
- Table 13: Small Business – ECM, SMB Cost-Effectiveness Results - PY2024 and PY2025

- Table 14: Small Business – Engine Block Heater Controls, SMB Cost-Effectiveness Results - PY2024 and PY2025
- Table 15: Small Business – Lighting, SMB Cost-Effectiveness Results - PY2024 and PY2025
- Table 16: Small Business – Small DHP, SMB Cost-Effectiveness Results - PY2024 and PY2025
- Table 17: Small Business – Smart Thermostat, SMB Cost-Effectiveness Results - PY2024 and PY2025
- Table 18: Project Manager / Trade Ally – Adaptive Refrigeration Control Cost-Effectiveness Results - PY2024 and PY2025
- Table 19: Project Manager / Trade Ally – Additional Measures Cost-Effectiveness Results - PY2024 and PY2025
- Table 20: Project Manager / Trade Ally – Compressed Air Cost-Effectiveness Results - PY2024 and PY2025
- Table 21: Project Manager / Trade Ally – Energy Management Cost-Effectiveness Results - PY2024 and PY2025
- Table 22: Project Manager / Trade Ally – Fast Acting Doors Cost-Effectiveness Results - PY2024 and PY2025
- Table 23: Project Manager / Trade Ally – HVAC, Custom Cost-Effectiveness Results - PY2024 and PY2025
- Table 24: Project Manager / Trade Ally – Motors Cost-Effectiveness Results - PY2024 and PY2025
- Table 25: Project Manager / Trade Ally – Refrigeration Cost-Effectiveness Results - PY2024 and PY2025
- Table 26: Project Manager / Trade Ally – Wastewater Cost-Effectiveness Results - PY2024 and PY2025
- Table 27: Project Manager / Trade Ally – Building Shell Cost-Effectiveness Results - PY2024 and PY2025
- Table 28: Project Manager / Trade Ally – Engine Block Heater Controls Cost-Effectiveness Results - PY2024 and PY2025
- Table 29: Project Manager / Trade Ally – Food Service Equipment Cost-Effectiveness Results - PY2024 and PY2025
- Table 30: Project Manager / Trade Ally – Lighting Cost-Effectiveness Results - PY2024 and PY2025
- Table 31: Project Manager / Trade Ally – Custom Capital Projects Cost-Effectiveness Results - PY2024 and PY2025
- Table 32: Project Manager / Trade Ally – Farm & Dairy Cost-Effectiveness Results - PY2024 and PY2025
- Table 33: Project Manager / Trade Ally – Drain for wheel line, hand line, portable main line, pivot, or linear Cost-Effectiveness Results - PY2024 and PY2025
- Table 34: Project Manager / Trade Ally – Gasket for wheel line, hand line, or portable main line Cost-Effectiveness Results - PY2024 and PY2025
- Table 35: Project Manager / Trade Ally – Impact Sprinkler, New or Rebuilt Cost-Effectiveness Results - PY2024 and PY2025
- Table 36: Project Manager / Trade Ally – Irrigation Pump Upgrades Cost-Effectiveness Results - PY2024 and PY2025

- Table 37: Project Manager / Trade Ally – Irrigation Pump VFD Cost-Effectiveness Results - PY2024 and PY2025
- Table 38: Project Manager / Trade Ally – Nozzle Cost-Effectiveness Results - PY2024 and PY2025
- Table 39: Project Manager / Trade Ally – Rotating Sprinkler Cost-Effectiveness Results - PY2024 and PY2025
- Table 40: Project Manager / Trade Ally – Sprinkler Package – replace high pressure to MESA Cost-Effectiveness Results - PY2024 and PY2025
- Table 41: Project Manager / Trade Ally – Sprinkler Package - replace LESA/LEPA/MDI Cost-Effectiveness Results - PY2024 and PY2025
- Table 42: Project Manager / Trade Ally – Sprinkler Package - replace MESA Cost-Effectiveness Results - PY2024 and PY2025
- Table 43: Project Manager / Trade Ally – Upgrade sprinkler package - high pressure to MESA Cost-Effectiveness Results - PY2024 and PY2025
- Table 44: Project Manager / Trade Ally – Upgrade sprinkler package - high pressure to LESA/LEPA/MDI Cost-Effectiveness Results - PY2024 and PY2025
- Table 45: Project Manager / Trade Ally – Upgrade sprinkler package - MESA to LESA/LEPA/MDI Cost-Effectiveness Results - PY2024 and PY2025
- Table 46: Project Manager / Trade Ally – Wheel Line Leveler Cost-Effectiveness Results - PY2024 and PY2025
- Table 47: Midstream – Lighting with NEIS Cost-Effectiveness Results - PY2024 and PY2025
- Table 48: Small Business – Anti-Sweat Heater Control, SMB with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 49: Small Business – DI HPWH, SMB with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 50: Small Business – DI ECM, SMB with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 51: Small Business – Lighting with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 52: Small Business – Small DHP, SMB with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 53: Project Manager / Trade Ally – Adaptive Refrigeration Control with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 54: Project Manager / Trade Ally – Additional Measures with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 55: Project Manager / Trade Ally – Compressed Air with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 56: Project Manager / Trade Ally – Energy Management with NEIs Cost-Effectiveness Results Cost-Effectiveness Results - PY2024 and PY2025
- Table 57: Project Manager / Trade Ally – Fast Acting Doors with NEIs Cost-Effectiveness Results - PY2024 and PY2025

- Table 58: Project Manager / Trade Ally – HVAC with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 59: Project Manager / Trade Ally – Motors with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 60: Project Manager / Trade Ally – Refrigeration with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 61: Project Manager / Trade Ally – Wastewater with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 62: Project Manager / Trade Ally – Lighting with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 63: Project Manager / Trade Ally – Custom Capital Projects with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 64: Project Manager / Trade Ally – Drain for wheel line, hand line, portable main line, pivot, or linear with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 65: Project Manager / Trade Ally – Gasket for wheel line, hand line, or portable main line with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 66: Project Manager / Trade Ally – Impact Sprinkler, New or Rebuilt with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 67: Project Manager / Trade Ally – Irrigation Pump VFD with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 68: Project Manager / Trade Ally – Nozzle with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 69: Project Manager / Trade Ally – Rotating Sprinkler with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 70: Project Manager / Trade Ally – Sprinkler Package - replace MESA with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 71: Project Manager / Trade Ally – Wheel Line Leveler with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 72: Wattsmart Business Non-Energy Impacts - PY2024 and PY2025

The following assumptions were utilized in the analysis:

- **Avoided Costs:** derived from PacifiCorp’s 2023 Integrated Resource Plan (IRP) Preferred Portfolio “W10 SC CETA”, converted into annual values using load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, non-energy impacts (NEIs), measure lives, incentive levels, program delivery, and portfolio costs were based on estimates provided by PacifiCorp.
- **Net-to-Gross (NTG):** ratios are assumed to be 1.0, consistent with condition (8)(a) to Order 01 in Docket UE-152-072.
- **Retail Rates:** 2021 rates provided by PacifiCorp and escalated by inflation for future years.

The following tables summarize cost-effectiveness assumptions and results for the Washington Wattsmart Business Program. The cost-effectiveness analysis inputs are shown in Table 1 through Table 3 below:

Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.77%
Commercial Line Loss	7.60%
Industrial Line Loss	6.82%
Irrigation Line Loss	7.68%
Commercial Energy Rate (\$/kWh)	\$0.092
Industrial Energy Rate (\$/kWh)	\$0.075
Irrigation Energy Rate (\$/kWh)	\$0.089
Inflation Rate ¹	2.27%

¹ Future rates determined using a 2.16% annual escalator.

Table 2: Annual Program Costs, Nominal - PY2024 and PY2025

Delivery Channel	Measure Category	Program Delivery	Utility Admin	Vendor Incentive Pilot	Incentives	Total Utility Budget	Gross Customer Costs
Midstream	Lighting	\$48,601	\$5,471	\$0	\$59,800	\$113,872	\$77,549
Project Manager / Trade Ally	Adaptive Refrigeration Control	\$150,076	\$13,281	\$0	\$176,257	\$339,615	\$311,330
Project Manager / Trade Ally	Additional Measures	\$209,833	\$38,229	\$0	\$590,333	\$838,395	\$887,110
Project Manager / Trade Ally	Compressed Air	\$337,112	\$52,080	\$0	\$693,593	\$1,082,786	\$970,506
Project Manager / Trade Ally	Energy Management	\$920,411	\$132,637	\$0	\$199,500	\$1,252,549	\$221,917
Project Manager / Trade Ally	Fast Acting Doors	\$164,900	\$14,613	\$0	\$193,600	\$373,113	\$322,416
Project Manager / Trade Ally	HVAC	\$383,264	\$47,783	\$0	\$1,236,188	\$1,667,235	\$2,241,653
Project Manager / Trade Ally	Motors	\$120,938	\$20,735	\$0	\$297,659	\$439,332	\$405,622
Project Manager / Trade Ally	Refrigeration	\$894,072	\$162,888	\$0	\$1,829,333	\$2,886,293	\$2,287,810
Project Manager / Trade Ally	Wastewater	\$109,478	\$19,945	\$0	\$279,860	\$409,284	\$377,580
Project Manager / Trade Ally	Building Shell	\$19,141	\$2,162	\$0	\$39,000	\$60,304	\$195,000
Project Manager / Trade Ally	Engine Block Heater Controls	\$35,957	\$4,054	\$0	\$21,150	\$61,161	\$40,795
Project Manager / Trade Ally	Food Service Equipment	\$0	\$0	\$0	\$0	\$0	\$0
Project Manager / Trade Ally	Lighting	\$2,685,454	\$302,237	\$0	\$6,823,500	\$9,811,191	\$6,001,050
Project Manager / Trade Ally	Custom Capital Projects	\$146,185	\$12,963	\$0	\$171,600	\$330,748	\$308,880

Project Manager / Trade Ally	Farm & Dairy	\$31,057	\$2,753	\$0	\$36,460	\$70,270	\$43,796
Project Manager / Trade Ally	Drain for wheel line, hand line, portable main line, pivot, or linear	\$519	\$46	\$0	\$400	\$965	\$1,578
Project Manager / Trade Ally	Gasket for wheel line, hand line, or portable main line	\$4,238	\$376	\$0	\$2,400	\$7,013	\$6,588
Project Manager / Trade Ally	Impact sprinkler, New or Rebuilt	\$201	\$18	\$0	\$200	\$419	\$7,888
Project Manager / Trade Ally	Irrigation Pump Upgrades, Custom	\$67,472	\$5,984	\$0	\$79,200	\$152,656	\$131,544
Project Manager / Trade Ally	Irrigation Pump VFD	\$153,682	\$13,628	\$0	\$180,400	\$347,710	\$324,714
Project Manager / Trade Ally	Nozzle	\$2,274	\$202	\$0	\$600	\$3,076	\$1,572
Project Manager / Trade Ally	Rotating sprinkler	\$201	\$18	\$0	\$200	\$419	\$7,888
Project Manager / Trade Ally	Sprinkler Package - replace high pressure	\$0	\$0	\$0	\$0	\$0	\$0
Project Manager / Trade Ally	Sprinkler Package - replace LESA/LEPA/MDI	\$0	\$0	\$0	\$0	\$0	\$0
Project Manager / Trade Ally	Sprinkler Package - replace MESA	\$9,513	\$844	\$0	\$5,880	\$16,237	\$47,363
Project Manager / Trade Ally	Upgrade sprinkler package - high pressure to MESA	\$4,827	\$428	\$0	\$2,940	\$8,195	\$15,053
Project Manager / Trade Ally	Upgrade sprinkler package - high pressure to LESA/LEPA/MDI	\$0	\$0	\$0	\$0	\$0	\$0
Project Manager / Trade Ally	Upgrade sprinkler package - MESA to LESA/LEPA/MDI	\$12,776	\$1,133	\$0	\$8,800	\$22,709	\$70,400
Project Manager / Trade Ally	Wheel line leveler	\$123	\$11	\$0	\$128	\$262	\$1,299
Small Business - Non Lighting	Anti-Sweat Heater Control, SMB	\$2,302	\$259	\$0	\$4,000	\$6,561	\$5,004
Small Business - Non Lighting	DI HPWH, SMB	\$2,924	\$329	\$0	\$23,250	\$26,503	\$14,532

Small Business - Non Lighting	ECM, SMB	\$1,197	\$135	\$0	\$2,000	\$3,331	\$1,815
Small Business - Non Lighting	Engine Block Heater Controls, SMB	\$1,638	\$184	\$0	\$1,600	\$3,421	\$1,852
Small Business - Lighting	Lighting	\$1,696,410	\$190,848	\$0	\$5,106,532	\$6,993,790	\$3,158,100
Small Business - Non Lighting	Small DHP, SMB	\$3,340	\$375	\$0	\$47,250	\$50,966	\$49,159
Small Business - Non Lighting	Smart T-Stat, SMB	\$5,573	\$627	\$0	\$40,100	\$46,300	\$14,918
Total Program		\$8,225,691	\$1,047,276	\$0	\$18,153,713	\$27,426,680	\$18,554,282

Table 3: Annual Savings - PY2024 and PY2025

Delivery Channel	Measure Category	Gross kWh Savings at Site	Realization Rate	Adjusted Gross kWh Savings at Site	Net to Gross Ratio	Net kWh Savings at Site	Measure Life
Midstream	Lighting	329,183	100%	329,183	100%	329,183	8
Project Manager / Trade Ally	Adaptive Refrigeration Control	801,170	100%	801,170	100%	801,170	12
Project Manager / Trade Ally	Additional Measures	2,300,000	84%	1,922,800	100%	1,922,800	15
Project Manager / Trade Ally	Compressed Air	3,133,000	98%	3,079,739	100%	3,079,739	14
Project Manager / Trade Ally	Energy Management	7,980,000	100%	7,980,000	100%	7,980,000	3
Project Manager / Trade Ally	Fast Acting Doors	880,000	100%	880,000	100%	880,000	8
Project Manager / Trade Ally	HVAC	2,873,789	88%	2,534,682	100%	2,534,682	13
Project Manager / Trade Ally	Motors	1,247,400	84%	1,042,826	100%	1,042,826	15
Project Manager / Trade Ally	Refrigeration	9,800,000	100%	9,800,000	100%	9,800,000	14
Project Manager / Trade Ally	Wastewater	1,200,000	92%	1,101,600	100%	1,101,600	15
Project Manager / Trade Ally	Building Shell	130,000	84%	108,680	100%	108,680	15
Project Manager / Trade Ally	Engine Block Heater Controls	243,817	84%	203,831	100%	203,831	10
Project Manager / Trade Ally	Food Service Equipment	0	0%	0	0%	0	0
Project Manager / Trade Ally	Lighting	18,185,000	100%	18,185,000	100%	18,185,000	12
Project Manager / Trade Ally	Custom Capital Projects	780,000	84%	652,080	100%	652,080	15

Project Manager / Trade Ally	Farm & Dairy	165,725	84%	138,546	100%	138,546	11
Project Manager / Trade Ally	Drain for wheel line, hand line, portable main line, pivot, or linear	2,767	100%	2,767	100%	2,767	6
Project Manager / Trade Ally	Gasket for wheel line, hand line, or portable main line	22,610	100%	22,610	100%	22,610	6
Project Manager / Trade Ally	Impact sprinkler, New or Rebuilt	1,074	100%	1,074	100%	1,074	6
Project Manager / Trade Ally	Irrigation Pump Upgrades, Custom	360,000	100%	360,000	100%	360,000	15
Project Manager / Trade Ally	Irrigation Pump VFD	820,000	100%	820,000	100%	820,000	10
Project Manager / Trade Ally	Nozzle	12,133	100%	12,133	100%	12,133	6
Project Manager / Trade Ally	Rotating sprinkler	1,074	100%	1,074	100%	1,074	6
Project Manager / Trade Ally	Sprinkler Package - replace high pressure	0	0%	0	0%	0	0
Project Manager / Trade Ally	Sprinkler Package - replace LESA/LEPA/MDI	0	0%	0	0%	0	0
Project Manager / Trade Ally	Sprinkler Package - replace MESA	50,758	100%	50,758	100%	50,758	6
Project Manager / Trade Ally	Upgrade sprinkler package - high pressure to MESA	25,756	100%	25,756	100%	25,756	10
Project Manager / Trade Ally	Upgrade sprinkler package - high pressure to LESA/LEPA/MDI	0	0%	0	0%	0	0
Project Manager / Trade Ally	Upgrade sprinkler package - MESA to LESA/LEPA/MDI	68,167	100%	68,167	100%	68,167	10
Project Manager / Trade Ally	Wheel line leveler	656	100%	656	100%	656	7
Small Business - Non Lighting	Anti-Sweat Heater Control, SMB	15,591	84%	13,034	100%	13,034	12
Small Business - Non Lighting	DI HPWH, SMB	19,792	84%	16,546	100%	16,546	18

Small Business - Non Lighting	ECM, SMB	8,105	84%	6,776	100%	6,776	15
Small Business - Non Lighting	Engine Block Heater Controls, SMB	11,067	84%	9,252	100%	9,252	10
Small Business - Lighting	Lighting	11,484,000	100%	11,484,000	100%	11,484,000	12
Small Business - Non Lighting	Small DHP, SMB	22,581	88%	19,917	100%	19,917	15
Small Business - Non Lighting	Smart T-Stat, SMB	37,719	88%	33,268	100%	33,268	5
Total Program		63,012,935	98%	61,707,926	100%	61,707,926	12

Table 4 presents the cost-effectiveness results by delivery channel, measure category and the total program.

Table 4: Benefit/Cost Ratios by Delivery Channel and Measure Category - PY2024 and PY2025

Delivery Channel	Measure Category	PTRC	TRC	UCT	PCT	RIM
Midstream	Lighting	1.85	1.68	1.94	3.91	0.62
Midstream	Lighting (with NEIs)	2.27	2.10	1.94	4.62	0.62
Project Manager / Trade Ally	Adaptive Refrigeration Control	1.62	1.48	2.06	2.97	0.64
Project Manager / Trade Ally	Adaptive Refrigeration Control (with NEIs)	1.66	1.52	2.06	3.03	0.64
Project Manager / Trade Ally	Additional Measures	1.84	1.67	2.26	2.83	0.69
Project Manager / Trade Ally	Additional Measures (with NEIs)	2.17	2.00	2.26	3.25	0.69
Project Manager / Trade Ally	Compressed Air	2.42	2.20	2.76	3.73	0.75
Project Manager / Trade Ally	Compressed Air (with NEIs)	2.50	2.28	2.76	3.84	0.75
Project Manager / Trade Ally	Energy Management	2.42	2.20	2.24	10.37	0.84
Project Manager / Trade Ally	Energy Management (with NEIs)	3.15	2.93	2.24	14.52	0.84
Project Manager / Trade Ally	Fast Acting Doors	1.41	1.28	1.73	2.44	0.67
Project Manager / Trade Ally	Fast Acting Doors (with NEIs)	1.44	1.32	1.73	2.48	0.67
Project Manager / Trade Ally	HVAC	0.92	0.84	1.34	1.69	0.53
Project Manager / Trade Ally	HVAC (with NEIs)	0.95	0.87	1.34	1.73	0.53
Project Manager / Trade Ally	Motors	2.05	1.86	2.32	3.21	0.71
Project Manager / Trade Ally	Motors (with NEIs)	2.36	2.17	2.32	3.63	0.71
Project Manager / Trade Ally	Refrigeration	3.06	2.78	3.22	5.20	0.72
Project Manager / Trade Ally	Refrigeration (with NEIs)	3.72	3.45	3.22	6.17	0.72
Project Manager / Trade Ally	Wastewater	2.37	2.16	2.67	3.94	0.68
Project Manager / Trade Ally	Wastewater (with NEIs)	2.76	2.54	2.67	4.46	0.68
Project Manager / Trade Ally	Building Shell	0.42	0.38	1.38	0.81	0.46
Project Manager / Trade Ally	Engine Block Heater Controls	2.17	1.97	2.60	4.54	0.71



Project Manager / Trade Ally	Food Service Equipment	0.00	0.00	0.00	0.00	0.00
Project Manager / Trade Ally	Lighting	1.67	1.52	1.39	3.79	0.53
Project Manager / Trade Ally	Lighting (with NEIs)	2.10	1.95	1.39	4.43	0.53
Project Manager / Trade Ally	Custom Capital Projects	1.51	1.37	1.94	2.44	0.70
Project Manager / Trade Ally	Custom Capital Projects (with NEIs)	1.75	1.61	1.94	2.80	0.70
Project Manager / Trade Ally	Farm & Dairy	1.69	1.53	1.69	3.07	0.71
Project Manager / Trade Ally	Drain for wheel line, hand line, portable main line, pivot, or linear	1.01	0.92	2.03	1.15	0.83
Project Manager / Trade Ally	Drain for wheel line, hand line, portable main line, pivot, or linear (with NEIs)	1.62	1.52	2.03	1.97	0.83
Project Manager / Trade Ally	Gasket for wheel line, hand line, or portable main line	1.57	1.43	2.29	2.11	0.86
Project Manager / Trade Ally	Gasket for wheel line, hand line, or portable main line (with NEIs)	2.07	1.93	2.29	2.96	0.86
Project Manager / Trade Ally	Impact sprinkler, New or Rebuilt	0.12	0.11	2.04	0.10	0.82
Project Manager / Trade Ally	Impact sprinkler, New or Rebuilt (with NEIs)	1.01	1.00	2.04	1.03	0.82
Project Manager / Trade Ally	Irrigation Pump Upgrades, Custom	2.34	2.12	2.85	3.52	0.81
Project Manager / Trade Ally	Irrigation Pump VFD	1.81	1.64	2.32	2.54	0.82
Project Manager / Trade Ally	Irrigation Pump VFD (with NEIs)	1.85	1.69	2.32	2.60	0.82
Project Manager / Trade Ally	Nozzle	2.34	2.13	2.80	4.32	0.93
Project Manager / Trade Ally	Nozzle (with NEIs)	2.67	2.46	2.80	5.18	0.93
Project Manager / Trade Ally	Rotating sprinkler	0.12	0.11	2.04	0.10	0.82
Project Manager / Trade Ally	Rotating sprinkler (with NEIs)	1.01	1.00	2.04	1.03	0.82
Project Manager / Trade Ally	Sprinkler Package - replace high pressure	0.00	0.00	0.00	0.00	0.00
Project Manager / Trade Ally	Sprinkler Package - replace LESA/LEPA/MDI	0.00	0.00	0.00	0.00	0.00
Project Manager / Trade Ally	Sprinkler Package - replace MESA	0.77	0.70	2.49	0.75	0.88
Project Manager / Trade Ally	Sprinkler Package - replace MESA (with NEIs)	1.52	1.45	2.49	1.66	0.88
Project Manager / Trade Ally	Upgrade sprinkler package - high pressure to MESA	1.38	1.25	3.10	1.54	0.89



Project Manager / Trade Ally	Upgrade sprinkler package - high pressure to LESA/LEPA/MDI	0.00	0.00	0.00	0.00	0.00
Project Manager / Trade Ally	Upgrade sprinkler package - MESA to LESA/LEPA/MDI	0.88	0.80	2.96	0.88	0.88
Project Manager / Trade Ally	Wheel line leveler	0.44	0.40	2.18	0.43	0.83
Project Manager / Trade Ally	Wheel line leveler (with NEIs)	1.29	1.25	2.18	1.37	0.83
Small Business - Non Lighting	Anti-Sweat Heater Control, SMB	1.68	1.53	1.76	3.22	0.62
Small Business - Non Lighting	Anti-Sweat Heater Control, SMB (with NEIs)	1.73	1.57	1.76	3.29	0.62
Small Business - Non Lighting	DI HPWH, SMB	0.89	0.81	0.54	3.01	0.31
Small Business - Non Lighting	DI HPWH, SMB (with NEIs)	0.92	0.84	0.54	3.05	0.31
Small Business - Non Lighting	ECM, SMB	2.18	1.98	1.87	5.19	0.58
Small Business - Non Lighting	ECM, SMB (with NEIs)	2.79	2.59	1.87	6.25	0.58
Small Business - Non Lighting	Engine Block Heater Controls, SMB	2.15	1.95	2.09	4.89	0.66
Small Business - Lighting	Lighting	1.88	1.71	1.23	4.99	0.49
Small Business - Lighting	Lighting (with NEIs)	1.90	1.73	1.23	5.03	0.49
Small Business - Non Lighting	Small DHP, SMB	0.38	0.35	0.36	1.41	0.25
Small Business - Non Lighting	Small DHP, SMB (with NEIs)	0.41	0.38	0.36	1.44	0.25
Small Business - Non Lighting	Smart T-Stat, SMB	0.91	0.83	0.38	3.68	0.29
Total Program		1.88	1.71	1.74	3.79	0.60
Total Program (with NEIs)		2.18	2.01	1.74	4.24	0.60



Table 5 presents the Wattsmart Business Program cost-effectiveness; the program is cost-effective for the PacifiCorp TRC, TRC, UCT and PCT tests.

Table 5: Wattsmart Business Program Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0557	\$26,928,195	\$50,757,653	\$23,829,459	1.88
Total Resource Cost Test (TRC) No Adder	\$0.0557	\$26,928,195	\$46,143,321	\$19,215,127	1.71
Utility Cost Test (UCT)	\$0.0549	\$26,539,864	\$46,143,321	\$19,603,458	1.74
Participant Cost Test (PCT)		\$17,958,335	\$68,043,497	\$50,085,162	3.79
Rate Impact Test (RIM)		\$77,013,357	\$46,143,321	(\$30,870,035)	0.60
Lifecycle Revenue Impacts (\$/kWh)					\$0.0015705
Discounted Participant Payback (years)					3.00

Table 6 through 10 present the PY2024 and PY2025 cost-effectiveness results (without NEIs) for the Delivery Channels, including Midstream, Small Business, and Trade Ally delivery options.

Table 6: Midstream Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0569	\$127,422	\$235,304	\$107,882	1.85
Total Resource Cost Test (TRC) No Adder	\$0.0569	\$127,422	\$213,913	\$86,491	1.68
Utility Cost Test (UCT)	\$0.0492	\$110,236	\$213,913	\$103,677	1.94
Participant Cost Test (PCT)		\$75,091	\$293,512	\$218,422	3.91
Rate Impact Test (RIM)		\$345,844	\$213,913	(\$131,931)	0.62
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000106
Discounted Participant Payback (years)					2.10



Table 7: Small Business Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0518	\$4,982,177	\$9,254,504	\$4,272,327	1.86
Total Resource Cost Test (TRC) No Adder	\$0.0518	\$4,982,177	\$8,413,185	\$3,431,009	1.69
Utility Cost Test (UCT)	\$0.0718	\$6,897,139	\$8,413,185	\$1,516,046	1.22
Participant Cost Test (PCT)		\$3,139,239	\$15,452,629	\$12,313,390	4.92
Rate Impact Test (RIM)		\$17,295,566	\$8,413,185	(\$8,882,381)	0.49
Lifecycle Revenue Impacts (\$/kWh)					\$0.0003527
Discounted Participant Payback (years)					2.43

Table 8: Cascade Trade Ally/Facilitation Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0489	\$10,763,289	\$25,184,766	\$14,421,477	2.34
Total Resource Cost Test (TRC) No Adder	\$0.0489	\$10,763,289	\$22,895,241	\$12,131,953	2.13
Utility Cost Test (UCT)	\$0.0398	\$8,743,185	\$22,895,241	\$14,152,056	2.62
Participant Cost Test (PCT)		\$6,893,680	\$27,757,307	\$20,863,627	4.03
Rate Impact Test (RIM)		\$31,626,915	\$22,895,241	(\$8,731,674)	0.72
Lifecycle Revenue Impacts (\$/kWh)					\$0.0007105
Discounted Participant Payback (years)					2.64

Table 9: Nexant Trade Ally Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0668	\$11,055,307	\$16,083,080	\$5,027,772	1.45
Total Resource Cost Test (TRC) No Adder	\$0.0668	\$11,055,307	\$14,620,981	\$3,565,674	1.32
Utility Cost Test (UCT)	\$0.0652	\$10,789,304	\$14,620,981	\$3,831,678	1.36
Participant Cost Test (PCT)		\$7,850,325	\$24,540,048	\$16,689,723	3.13
Rate Impact Test (RIM)		\$27,745,031	\$14,620,981	(\$13,124,049)	0.53
Lifecycle Revenue Impacts (\$/kWh)					\$0.0006233
Discounted Participant Payback (years)					3.84



Table 10: Midstream - Lighting (without NEIs) Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0569	\$127,422	\$235,304	\$107,882	1.85
Total Resource Cost Test (TRC) No Adder	\$0.0569	\$127,422	\$213,913	\$86,491	1.68
Utility Cost Test (UCT)	\$0.0492	\$110,236	\$213,913	\$103,677	1.94
Participant Cost Test (PCT)		\$75,091	\$293,512	\$218,422	3.91
Rate Impact Test (RIM)		\$345,844	\$213,913	(\$131,931)	0.62
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000106
Discounted Participant Payback (years)					2.10

Table 11 through Table 17 presents the PY2024 and PY2025 cost-effectiveness results for the Small Business delivery options without NEIs.

Table 11: Small Business - Anti-Sweat Heater Control, SMB Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0676	\$7,324	\$12,297	\$4,972	1.68
Total Resource Cost Test (TRC) No Adder	\$0.0676	\$7,324	\$11,179	\$3,854	1.53
Utility Cost Test (UCT)	\$0.0586	\$6,352	\$11,179	\$4,827	1.76
Participant Cost Test (PCT)		\$4,846	\$15,590	\$10,744	3.22
Rate Impact Test (RIM)		\$18,069	\$11,179	(\$6,890)	0.62
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000005
Discounted Participant Payback (years)					3.73

Table 12: Small Business - DI HPWH, SMB Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0984	\$17,201	\$15,334	(\$1,867)	0.89
Total Resource Cost Test (TRC) No Adder	\$0.0984	\$17,201	\$13,940	(\$3,261)	0.81
Utility Cost Test (UCT)	\$0.1467	\$25,634	\$13,940	(\$11,694)	0.54
Participant Cost Test (PCT)		\$14,056	\$42,356	\$28,300	3.01
Rate Impact Test (RIM)		\$45,500	\$13,940	(\$31,560)	0.31
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000009
Discounted Participant Payback (years)					5.97



Table 13: Small Business - ECM, SMB Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0470	\$3,046	\$6,648	\$3,602	2.18
Total Resource Cost Test (TRC) No Adder	\$0.0470	\$3,046	\$6,043	\$2,998	1.98
Utility Cost Test (UCT)	\$0.0498	\$3,225	\$6,043	\$2,818	1.87
Participant Cost Test (PCT)		\$1,757	\$9,119	\$7,362	5.19
Rate Impact Test (RIM)		\$10,408	\$6,043	(\$4,364)	0.58
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000002
Discounted Participant Payback (years)					2.89

Table 14: Small Business - Engine Block Heater Controls, SMB Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0524	\$3,541	\$7,599	\$4,058	2.15
Total Resource Cost Test (TRC) No Adder	\$0.0524	\$3,541	\$6,908	\$3,367	1.95
Utility Cost Test (UCT)	\$0.0488	\$3,298	\$6,908	\$3,610	2.09
Participant Cost Test (PCT)		\$1,786	\$8,735	\$6,949	4.89
Rate Impact Test (RIM)		\$10,491	\$6,908	(\$3,582)	0.66
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000003
Discounted Participant Payback (years)					2.04

Table 15: Small Business - Lighting, SMB Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0512	\$4,879,638	\$9,174,613	\$4,294,975	1.88
Total Resource Cost Test (TRC) No Adder	\$0.0512	\$4,879,638	\$8,340,558	\$3,460,919	1.71
Utility Cost Test (UCT)	\$0.0709	\$6,764,670	\$8,340,558	\$1,575,887	1.23
Participant Cost Test (PCT)		\$3,054,943	\$15,257,040	\$12,202,097	4.99
Rate Impact Test (RIM)		\$17,081,736	\$8,340,558	(\$8,741,178)	0.49
Lifecycle Revenue Impacts (\$/kWh)					\$0.0004370
Discounted Participant Payback (years)					2.40



Table 16: Small Business – Small DHP, SMB Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2690	\$51,011	\$19,391	(\$31,620)	0.38
Total Resource Cost Test (TRC) No Adder	\$0.2690	\$51,011	\$17,628	(\$33,383)	0.35
Utility Cost Test (UCT)	\$0.2593	\$49,168	\$17,628	(\$31,540)	0.36
Participant Cost Test (PCT)		\$47,428	\$66,647	\$19,219	1.41
Rate Impact Test (RIM)		\$70,230	\$17,628	(\$52,602)	0.25
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000016
Discounted Participant Payback (years)					10.67

Table 17: Small Business – Smart Thermostat, SMB Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1441	\$20,416	\$18,623	(\$1,793)	0.91
Total Resource Cost Test (TRC) No Adder	\$0.1441	\$20,416	\$16,930	(\$3,486)	0.83
Utility Cost Test (UCT)	\$0.3161	\$44,792	\$16,930	(\$27,862)	0.38
Participant Cost Test (PCT)		\$14,424	\$53,142	\$38,718	3.68
Rate Impact Test (RIM)		\$59,134	\$16,930	(\$42,204)	0.29
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000027
Discounted Participant Payback (years)					1.36

Table 18 through Table 46 presents the PY2024 and PY2025 cost-effectiveness results for the Project Manager / Trade Ally delivery options without NEIs.

Table 18: Project Manager / Trade Ally – Adaptive Refrigeration Control Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0690	\$451,894	\$734,270	\$282,376	1.62
Total Resource Cost Test (TRC) No Adder	\$0.0690	\$451,894	\$667,518	\$215,624	1.48
Utility Cost Test (UCT)	\$0.0494	\$323,386	\$667,518	\$344,133	2.06
Participant Cost Test (PCT)		\$296,340	\$880,189	\$583,848	2.97
Rate Impact Test (RIM)		\$1,035,742	\$667,518	(\$368,224)	0.64
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000265
Discounted Participant Payback (years)					4.04



Table 19: Project Manager / Trade Ally – Additional Measures Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0598	\$1,098,643	\$2,019,579	\$920,937	1.84
Total Resource Cost Test (TRC) No Adder	\$0.0598	\$1,098,643	\$1,835,981	\$737,338	1.67
Utility Cost Test (UCT)	\$0.0442	\$811,691	\$1,835,981	\$1,024,291	2.26
Participant Cost Test (PCT)		\$858,570	\$2,428,391	\$1,569,822	2.83
Rate Impact Test (RIM)		\$2,668,464	\$1,835,981	(\$832,483)	0.69
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000599
Discounted Participant Payback (years)					5.30

Table 20: Project Manager / Trade Ally – Compressed Air Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0458	\$1,317,253	\$3,186,267	\$1,869,014	2.42
Total Resource Cost Test (TRC) No Adder	\$0.0458	\$1,317,253	\$2,896,607	\$1,579,354	2.20
Utility Cost Test (UCT)	\$0.0365	\$1,049,222	\$2,896,607	\$1,847,384	2.76
Participant Cost Test (PCT)		\$940,102	\$3,505,465	\$2,565,363	3.73
Rate Impact Test (RIM)		\$3,882,616	\$2,896,607	(\$986,009)	0.75
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000872
Discounted Participant Payback (years)					3.82

Table 21: Project Manager / Trade Ally – Energy Management Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0568	\$1,234,161	\$2,992,647	\$1,758,487	2.42
Total Resource Cost Test (TRC) No Adder	\$0.0568	\$1,234,161	\$2,720,589	\$1,486,428	2.20
Utility Cost Test (UCT)	\$0.0558	\$1,212,533	\$2,720,589	\$1,508,056	2.24
Participant Cost Test (PCT)		\$214,803	\$2,227,994	\$2,013,191	10.37
Rate Impact Test (RIM)		\$3,247,352	\$2,720,589	(\$526,763)	0.84
Lifecycle Revenue Impacts (\$/kWh)					\$0.0002106
Discounted Participant Payback (years)					0.29



Table 22: Project Manager / Trade Ally – Fast Acting Doors Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0886	\$482,984	\$682,450	\$199,465	1.41
Total Resource Cost Test (TRC) No Adder	\$0.0886	\$482,984	\$620,409	\$137,424	1.28
Utility Cost Test (UCT)	\$0.0659	\$359,141	\$620,409	\$261,268	1.73
Participant Cost Test (PCT)		\$310,190	\$755,410	\$445,220	2.44
Rate Impact Test (RIM)		\$928,204	\$620,409	(\$307,796)	0.67
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000308
Discounted Participant Payback (years)					3.28

Table 23: Project Manager / Trade Ally – HVAC Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1146	\$2,595,421	\$2,388,571	(\$206,850)	0.92
Total Resource Cost Test (TRC) No Adder	\$0.1146	\$2,595,421	\$2,171,428	(\$423,993)	0.84
Utility Cost Test (UCT)	\$0.0715	\$1,618,541	\$2,171,428	\$552,887	1.34
Participant Cost Test (PCT)		\$2,177,153	\$3,681,178	\$1,504,025	1.69
Rate Impact Test (RIM)		\$4,099,446	\$2,171,428	(\$1,928,018)	0.53
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000921
Discounted Participant Payback (years)					7.77

Table 24: Project Manager / Trade Ally – Motors Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0539	\$529,887	\$1,086,116	\$556,229	2.05
Total Resource Cost Test (TRC) No Adder	\$0.0539	\$529,887	\$987,378	\$457,491	1.86
Utility Cost Test (UCT)	\$0.0433	\$425,484	\$987,378	\$561,894	2.32
Participant Cost Test (PCT)		\$392,674	\$1,260,014	\$867,340	3.21
Rate Impact Test (RIM)		\$1,397,227	\$987,378	(\$409,849)	0.71
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000314
Discounted Participant Payback (years)					4.59



Table 25: Project Manager / Trade Ally – Refrigeration Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0360	\$3,237,126	\$9,905,784	\$6,668,657	3.06
Total Resource Cost Test (TRC) No Adder	\$0.0360	\$3,237,126	\$9,005,258	\$5,768,132	2.78
Utility Cost Test (UCT)	\$0.0311	\$2,794,257	\$9,005,258	\$6,211,001	3.22
Participant Cost Test (PCT)		\$2,214,206	\$11,505,660	\$9,291,454	5.20
Rate Impact Test (RIM)		\$12,528,580	\$9,005,258	(\$3,523,323)	0.72
Lifecycle Revenue Impacts (\$/kWh)					\$0.0002926
Discounted Participant Payback (years)					2.69

Table 26: Project Manager / Trade Ally – Wastewater Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0465	\$490,688	\$1,163,185	\$672,497	2.37
Total Resource Cost Test (TRC) No Adder	\$0.0465	\$490,688	\$1,057,441	\$566,753	2.16
Utility Cost Test (UCT)	\$0.0375	\$396,238	\$1,057,441	\$661,202	2.67
Participant Cost Test (PCT)		\$365,432	\$1,440,928	\$1,075,496	3.94
Rate Impact Test (RIM)		\$1,566,184	\$1,057,441	(\$508,743)	0.68
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000352
Discounted Participant Payback (years)					3.80

Table 27: Project Manager / Trade Ally – Building Shell Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2017	\$210,491	\$88,822	(\$121,669)	0.42
Total Resource Cost Test (TRC) No Adder	\$0.2017	\$210,491	\$80,747	(\$129,744)	0.38
Utility Cost Test (UCT)	\$0.0562	\$58,676	\$80,747	\$22,071	1.38
Participant Cost Test (PCT)		\$189,769	\$153,537	(\$36,232)	0.81
Rate Impact Test (RIM)		\$174,259	\$80,747	(\$93,512)	0.46
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000039
Discounted Participant Payback (years)					18.54



Table 28: Project Manager / Trade Ally – Engine Block Heater Controls Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0523	\$78,388	\$169,881	\$91,494	2.17
Total Resource Cost Test (TRC) No Adder	\$0.0523	\$78,388	\$154,438	\$76,050	1.97
Utility Cost Test (UCT)	\$0.0396	\$59,326	\$154,438	\$95,112	2.60
Participant Cost Test (PCT)		\$39,584	\$179,619	\$140,035	4.54
Rate Impact Test (RIM)		\$218,423	\$154,438	(\$63,986)	0.71
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000063
Discounted Participant Payback (years)					2.20

Table 29: Project Manager / Trade Ally – Food Service Equipment Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0000	\$0	\$0	\$0	n/a
Total Resource Cost Test (TRC) No Adder	\$0.0000	\$0	\$0	\$0	n/a
Utility Cost Test (UCT)	\$0.0000	\$0	\$0	\$0	n/a
Participant Cost Test (PCT)		\$0	\$0	\$0	n/a
Rate Impact Test (RIM)		\$0	\$0	\$0	n/a
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					n/a

Table 30: Project Manager / Trade Ally – Lighting Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0576	\$8,698,630	\$14,544,547	\$5,845,917	1.67
Total Resource Cost Test (TRC) No Adder	\$0.0576	\$8,698,630	\$13,222,315	\$4,523,685	1.52
Utility Cost Test (UCT)	\$0.0628	\$9,494,500	\$13,222,315	\$3,727,815	1.39
Participant Cost Test (PCT)		\$5,808,336	\$22,035,054	\$16,226,718	3.79
Rate Impact Test (RIM)		\$24,925,348	\$13,222,315	(\$11,703,033)	0.53
Lifecycle Revenue Impacts (\$/kWh)					\$0.0006376
Discounted Participant Payback (years)					3.16



Table 31: Project Manager / Trade Ally – Custom Capital Projects Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0727	\$452,672	\$683,858	\$231,186	1.51
Total Resource Cost Test (TRC) No Adder	\$0.0727	\$452,672	\$621,689	\$169,017	1.37
Utility Cost Test (UCT)	\$0.0514	\$320,001	\$621,689	\$301,688	1.94
Participant Cost Test (PCT)		\$298,692	\$728,287	\$429,595	2.44
Rate Impact Test (RIM)		\$882,267	\$621,689	(\$260,578)	0.70
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000198
Discounted Participant Payback (years)					6.15

Table 32: Project Manager / Trade Ally – Farm & Dairy, Custom Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0691	\$74,894	\$126,353	\$51,459	1.69
Total Resource Cost Test (TRC) No Adder	\$0.0691	\$74,894	\$114,867	\$39,973	1.53
Utility Cost Test (UCT)	\$0.0626	\$67,832	\$114,867	\$47,034	1.69
Participant Cost Test (PCT)		\$42,256	\$129,778	\$87,523	3.07
Rate Impact Test (RIM)		\$162,417	\$114,867	(\$47,550)	0.71
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000044
Discounted Participant Payback (years)					3.58

Table 33: Project Manager / Trade Ally – Drain for wheel line, hand line, portable main line, pivot, or linear Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1511	\$2,075	\$2,090	\$15	1.01
Total Resource Cost Test (TRC) No Adder	\$0.1511	\$2,075	\$1,900	(\$175)	0.92
Utility Cost Test (UCT)	\$0.0680	\$934	\$1,900	\$966	2.03
Participant Cost Test (PCT)		\$1,528	\$1,754	\$226	1.15
Rate Impact Test (RIM)		\$2,301	\$1,900	(\$401)	0.83
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000001
Discounted Participant Payback (years)					5.14



Table 34: Project Manager / Trade Ally – Gasket for wheel line, hand line, or portable main line Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0967	\$10,846	\$17,078	\$6,232	1.57
Total Resource Cost Test (TRC) No Adder	\$0.0967	\$10,846	\$15,526	\$4,679	1.43
Utility Cost Test (UCT)	\$0.0605	\$6,791	\$15,526	\$8,734	2.29
Participant Cost Test (PCT)		\$6,379	\$13,491	\$7,112	2.11
Rate Impact Test (RIM)		\$17,959	\$15,526	(\$2,433)	0.86
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000007
Discounted Participant Payback (years)					2.79

Table 35: Project Manager / Trade Ally – Impact Sprinkler, New or Rebuilt Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$1.3010	\$7,850	\$911	(\$6,939)	0.12
Total Resource Cost Test (TRC) No Adder	\$1.3010	\$7,850	\$828	(\$7,022)	0.11
Utility Cost Test (UCT)	\$0.0673	\$406	\$828	\$422	2.04
Participant Cost Test (PCT)		\$7,638	\$800	(\$6,838)	0.10
Rate Impact Test (RIM)		\$1,012	\$828	(\$184)	0.82
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					59.18

Table 36: Project Manager / Trade Ally – Irrigation Pump Upgrades Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0577	\$198,442	\$463,376	\$264,934	2.34
Total Resource Cost Test (TRC) No Adder	\$0.0577	\$198,442	\$421,251	\$222,809	2.12
Utility Cost Test (UCT)	\$0.0430	\$147,819	\$421,251	\$273,432	2.85
Participant Cost Test (PCT)		\$127,312	\$448,280	\$320,968	3.52
Rate Impact Test (RIM)		\$519,410	\$421,251	(\$98,159)	0.81
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000117
Discounted Participant Payback (years)					4.26



Table 37: Project Manager / Trade Ally – Irrigation Pump VFD Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0791	\$475,900	\$859,727	\$383,826	1.81
Total Resource Cost Test (TRC) No Adder	\$0.0791	\$475,900	\$781,570	\$305,670	1.64
Utility Cost Test (UCT)	\$0.0559	\$336,425	\$781,570	\$445,145	2.32
Participant Cost Test (PCT)		\$314,016	\$796,606	\$482,590	2.54
Rate Impact Test (RIM)		\$958,490	\$781,570	(\$176,921)	0.82
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000275
Discounted Participant Payback (years)					3.94

Table 38: Project Manager / Trade Ally – Nozzle Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0651	\$3,919	\$9,164	\$5,245	2.34
Total Resource Cost Test (TRC) No Adder	\$0.0651	\$3,919	\$8,331	\$4,412	2.13
Utility Cost Test (UCT)	\$0.0495	\$2,978	\$8,331	\$5,353	2.80
Participant Cost Test (PCT)		\$1,522	\$6,574	\$5,051	4.32
Rate Impact Test (RIM)		\$8,971	\$8,331	(\$640)	0.93
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000004
Discounted Participant Payback (years)					1.34

Table 39: Project Manager / Trade Ally – Rotating Sprinkler Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$1.3010	\$7,850	\$911	(\$6,939)	0.12
Total Resource Cost Test (TRC) No Adder	\$1.3010	\$7,850	\$828	(\$7,022)	0.11
Utility Cost Test (UCT)	\$0.0673	\$406	\$828	\$422	2.04
Participant Cost Test (PCT)		\$7,638	\$800	(\$6,838)	0.10
Rate Impact Test (RIM)		\$1,012	\$828	(\$184)	0.82
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					59.18



Table 40: Project Manager / Trade Ally – Sprinkler Package - replace high pressure to MESA Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0000	\$0	\$0	\$0	n/a
Total Resource Cost Test (TRC) No Adder	\$0.0000	\$0	\$0	\$0	n/a
Utility Cost Test (UCT)	\$0.0000	\$0	\$0	\$0	n/a
Participant Cost Test (PCT)		\$0	\$0	\$0	n/a
Rate Impact Test (RIM)		\$0	\$0	\$0	n/a
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					n/a

Table 41: Project Manager / Trade Ally – Sprinkler Package - replace LESA/LEPA/MDI Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0000	\$0	\$0	\$0	n/a
Total Resource Cost Test (TRC) No Adder	\$0.0000	\$0	\$0	\$0	n/a
Utility Cost Test (UCT)	\$0.0000	\$0	\$0	\$0	n/a
Participant Cost Test (PCT)		\$0	\$0	\$0	n/a
Rate Impact Test (RIM)		\$0	\$0	\$0	n/a
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					n/a

Table 42: Project Manager / Trade Ally – Sprinkler Package - replace MESA Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1960	\$55,891	\$43,036	(\$12,854)	0.77
Total Resource Cost Test (TRC) No Adder	\$0.1960	\$55,891	\$39,124	(\$16,767)	0.70
Utility Cost Test (UCT)	\$0.0551	\$15,723	\$39,124	\$23,401	2.49
Participant Cost Test (PCT)		\$45,862	\$34,349	(\$11,513)	0.75
Rate Impact Test (RIM)		\$44,378	\$39,124	(\$5,254)	0.88
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000016
Discounted Participant Payback (years)					8.28



Table 43: Project Manager / Trade Ally – Upgrade sprinkler package - high pressure to MESA Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1040	\$19,665	\$27,042	\$7,377	1.38
Total Resource Cost Test (TRC) No Adder	\$0.1040	\$19,665	\$24,584	\$4,919	1.25
Utility Cost Test (UCT)	\$0.0420	\$7,936	\$24,584	\$16,648	3.10
Participant Cost Test (PCT)		\$14,576	\$22,396	\$7,820	1.54
Rate Impact Test (RIM)		\$27,485	\$24,584	(\$2,901)	0.89
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000008
Discounted Participant Payback (years)					6.51

Table 44: Project Manager / Trade Ally – Upgrade sprinkler package - high pressure to LESA/LEPA/MDI Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0000	\$0	\$0	\$0	n/a
Total Resource Cost Test (TRC) No Adder	\$0.0000	\$0	\$0	\$0	n/a
Utility Cost Test (UCT)	\$0.0000	\$0	\$0	\$0	n/a
Participant Cost Test (PCT)		\$0	\$0	\$0	n/a
Rate Impact Test (RIM)		\$0	\$0	\$0	n/a
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					n/a

Table 45: Project Manager / Trade Ally – Upgrade sprinkler package - MESA to LESA/LEPA/MDI Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1632	\$81,637	\$71,571	(\$10,066)	0.88
Total Resource Cost Test (TRC) No Adder	\$0.1632	\$81,637	\$65,064	(\$16,573)	0.80
Utility Cost Test (UCT)	\$0.0440	\$21,990	\$65,064	\$43,074	2.96
Participant Cost Test (PCT)		\$68,168	\$60,261	(\$7,907)	0.88
Rate Impact Test (RIM)		\$73,730	\$65,064	(\$8,666)	0.88
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000021
Discounted Participant Payback (years)					11.31



Table 46: Project Manager / Trade Ally – Wheel Line Leveler Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.3398	\$1,388	\$608	(\$779)	0.44
Total Resource Cost Test (TRC) No Adder	\$0.3398	\$1,388	\$553	(\$835)	0.40
Utility Cost Test (UCT)	\$0.0621	\$253	\$553	\$299	2.18
Participant Cost Test (PCT)		\$1,258	\$538	(\$720)	0.43
Rate Impact Test (RIM)		\$668	\$553	(\$115)	0.83
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					16.82

Table 47 presents the PY2024 and PY2025 cost-effectiveness results with NEIs for the Midstream Lighting delivery options.

Table 47: Midstream – Lighting with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0569	\$127,422	\$289,029	\$161,607	2.27
Total Resource Cost Test (TRC) No Adder	\$0.0569	\$127,422	\$267,638	\$140,216	2.10
Utility Cost Test (UCT)	\$0.0492	\$110,236	\$213,913	\$103,677	1.94
Participant Cost Test (PCT)		\$75,091	\$347,237	\$272,147	4.62
Rate Impact Test (RIM)		\$345,844	\$213,913	(\$131,931)	0.62
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000106
Discounted Participant Payback (years)					1.77

Table 48 through Table 52 presents the PY2024 and PY2025 cost-effectiveness results for the Small Business delivery options with NEIs.



Table 48: Small Business – Anti-Sweat Heater Control, SMB with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0676	\$7,324	\$12,649	\$5,325	1.73
Total Resource Cost Test (TRC) No Adder	\$0.0676	\$7,324	\$11,531	\$4,207	1.57
Utility Cost Test (UCT)	\$0.0586	\$6,352	\$11,179	\$4,827	1.76
Participant Cost Test (PCT)		\$4,846	\$15,943	\$11,097	3.29
Rate Impact Test (RIM)		\$18,069	\$11,179	(\$6,890)	0.62
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000005
Discounted Participant Payback (years)					3.65

Table 49: Small Business – DI HPWH, SMB with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0984	\$17,201	\$15,821	(\$1,380)	0.92
Total Resource Cost Test (TRC) No Adder	\$0.0984	\$17,201	\$14,427	(\$2,774)	0.84
Utility Cost Test (UCT)	\$0.1467	\$25,634	\$13,940	(\$11,694)	0.54
Participant Cost Test (PCT)		\$14,056	\$42,843	\$28,787	3.05
Rate Impact Test (RIM)		\$45,500	\$13,940	(\$31,560)	0.31
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000009
Discounted Participant Payback (years)					5.91

Table 50: Small Business – ECM, SMB with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0470	\$3,046	\$8,503	\$5,457	2.79
Total Resource Cost Test (TRC) No Adder	\$0.0470	\$3,046	\$7,898	\$4,853	2.59
Utility Cost Test (UCT)	\$0.0498	\$3,225	\$6,043	\$2,818	1.87
Participant Cost Test (PCT)		\$1,757	\$10,974	\$9,217	6.25
Rate Impact Test (RIM)		\$10,408	\$6,043	(\$4,364)	0.58
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000002
Discounted Participant Payback (years)					2.40



Table 51: Small Business – Lighting with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0512	\$4,879,638	\$9,289,461	\$4,409,822	1.90
Total Resource Cost Test (TRC) No Adder	\$0.0512	\$4,879,638	\$8,455,405	\$3,575,767	1.73
Utility Cost Test (UCT)	\$0.0709	\$6,764,670	\$8,340,558	\$1,575,887	1.23
Participant Cost Test (PCT)		\$3,054,943	\$15,371,887	\$12,316,945	5.03
Rate Impact Test (RIM)		\$17,081,736	\$8,340,558	(\$8,741,178)	0.49
Lifecycle Revenue Impacts (\$/kWh)					\$0.0004370
Discounted Participant Payback (years)					2.38

Table 52: Small Business – Small DHP, SMB with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2690	\$51,011	\$21,069	(\$29,942)	0.41
Total Resource Cost Test (TRC) No Adder	\$0.2690	\$51,011	\$19,306	(\$31,705)	0.38
Utility Cost Test (UCT)	\$0.2593	\$49,168	\$17,628	(\$31,540)	0.36
Participant Cost Test (PCT)		\$47,428	\$68,325	\$20,897	1.44
Rate Impact Test (RIM)		\$70,230	\$17,628	(\$52,602)	0.25
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000016
Discounted Participant Payback (years)					10.41

Table 53 through Table 71 presents the PY2024 and PY2025 cost-effectiveness results for the Project Manager / Trade Ally delivery options with NEIs. Table 72 details the non-energy benefits included in this analysis.

Table 53: Project Manager / Trade Ally – Adaptive Refrigeration Control with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0690	\$451,894	\$752,094	\$300,200	1.66
Total Resource Cost Test (TRC) No Adder	\$0.0690	\$451,894	\$685,343	\$233,448	1.52
Utility Cost Test (UCT)	\$0.0494	\$323,386	\$667,518	\$344,133	2.06
Participant Cost Test (PCT)		\$296,340	\$898,013	\$601,672	3.03
Rate Impact Test (RIM)		\$1,035,742	\$667,518	(\$368,224)	0.64
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000265
Discounted Participant Payback (years)					3.96



Table 54: Project Manager / Trade Ally – Additional Measures with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0598	\$1,098,643	\$2,381,564	\$1,282,921	2.17
Total Resource Cost Test (TRC) No Adder	\$0.0598	\$1,098,643	\$2,197,966	\$1,099,323	2.00
Utility Cost Test (UCT)	\$0.0442	\$811,691	\$1,835,981	\$1,024,291	2.26
Participant Cost Test (PCT)		\$858,570	\$2,790,376	\$1,931,806	3.25
Rate Impact Test (RIM)		\$2,668,464	\$1,835,981	(\$832,483)	0.69
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000599
Discounted Participant Payback (years)					4.62

Table 55: Project Manager / Trade Ally – Compressed Air with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0458	\$1,317,253	\$3,288,350	\$1,971,097	2.50
Total Resource Cost Test (TRC) No Adder	\$0.0458	\$1,317,253	\$2,998,689	\$1,681,436	2.28
Utility Cost Test (UCT)	\$0.0365	\$1,049,222	\$2,896,607	\$1,847,384	2.76
Participant Cost Test (PCT)		\$940,102	\$3,607,547	\$2,667,445	3.84
Rate Impact Test (RIM)		\$3,882,616	\$2,896,607	(\$986,009)	0.75
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000872
Discounted Participant Payback (years)					3.71

Table 56: Project Manager / Trade Ally – Energy Management with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0568	\$1,234,161	\$3,882,956	\$2,648,795	3.15
Total Resource Cost Test (TRC) No Adder	\$0.0568	\$1,234,161	\$3,610,897	\$2,376,737	2.93
Utility Cost Test (UCT)	\$0.0558	\$1,212,533	\$2,720,589	\$1,508,056	2.24
Participant Cost Test (PCT)		\$214,803	\$3,118,303	\$2,903,500	14.52
Rate Impact Test (RIM)		\$3,247,352	\$2,720,589	(\$526,763)	0.84
Lifecycle Revenue Impacts (\$/kWh)					\$0.0002106
Discounted Participant Payback (years)					0.21



Table 57: Project Manager / Trade Ally – Fast Acting Doors with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0886	\$482,984	\$697,285	\$214,301	1.44
Total Resource Cost Test (TRC) No Adder	\$0.0886	\$482,984	\$635,244	\$152,260	1.32
Utility Cost Test (UCT)	\$0.0659	\$359,141	\$620,409	\$261,268	1.73
Participant Cost Test (PCT)		\$310,190	\$770,246	\$460,056	2.48
Rate Impact Test (RIM)		\$928,204	\$620,409	(\$307,796)	0.67
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000308
Discounted Participant Payback (years)					3.22

Table 58: Project Manager / Trade Ally – HVAC with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1146	\$2,595,421	\$2,467,508	(\$127,913)	0.95
Total Resource Cost Test (TRC) No Adder	\$0.1146	\$2,595,421	\$2,250,365	(\$345,056)	0.87
Utility Cost Test (UCT)	\$0.0715	\$1,618,541	\$2,171,428	\$552,887	1.34
Participant Cost Test (PCT)		\$2,177,153	\$3,760,115	\$1,582,962	1.73
Rate Impact Test (RIM)		\$4,099,446	\$2,171,428	(\$1,928,018)	0.53
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000921
Discounted Participant Payback (years)					7.60

Table 59: Project Manager / Trade Ally – Motors with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0539	\$529,887	\$1,249,646	\$719,759	2.36
Total Resource Cost Test (TRC) No Adder	\$0.0539	\$529,887	\$1,150,909	\$621,021	2.17
Utility Cost Test (UCT)	\$0.0433	\$425,484	\$987,378	\$561,894	2.32
Participant Cost Test (PCT)		\$392,674	\$1,423,545	\$1,030,870	3.63
Rate Impact Test (RIM)		\$1,397,227	\$987,378	(\$409,849)	0.71
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000314
Discounted Participant Payback (years)					4.07



Table 60: Project Manager / Trade Ally – Refrigeration with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0360	\$3,237,126	\$12,057,853	\$8,820,727	3.72
Total Resource Cost Test (TRC) No Adder	\$0.0360	\$3,237,126	\$11,157,328	\$7,920,201	3.45
Utility Cost Test (UCT)	\$0.0311	\$2,794,257	\$9,005,258	\$6,211,001	3.22
Participant Cost Test (PCT)		\$2,214,206	\$13,657,730	\$11,443,524	6.17
Rate Impact Test (RIM)		\$12,528,580	\$9,005,258	(\$3,523,323)	0.72
Lifecycle Revenue Impacts (\$/kWh)					\$0.0002926
Discounted Participant Payback (years)					2.27

Table 61: Project Manager / Trade Ally – Wastewater with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0465	\$490,688	\$1,352,047	\$861,359	2.76
Total Resource Cost Test (TRC) No Adder	\$0.0465	\$490,688	\$1,246,303	\$755,615	2.54
Utility Cost Test (UCT)	\$0.0375	\$396,238	\$1,057,441	\$661,202	2.67
Participant Cost Test (PCT)		\$365,432	\$1,629,790	\$1,264,358	4.46
Rate Impact Test (RIM)		\$1,566,184	\$1,057,441	(\$508,743)	0.68
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000352
Discounted Participant Payback (years)					3.36

Table 62: Project Manager / Trade Ally – Lighting with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0576	\$8,698,630	\$18,265,392	\$9,566,762	2.10
Total Resource Cost Test (TRC) No Adder	\$0.0576	\$8,698,630	\$16,943,161	\$8,244,531	1.95
Utility Cost Test (UCT)	\$0.0628	\$9,494,500	\$13,222,315	\$3,727,815	1.39
Participant Cost Test (PCT)		\$5,808,336	\$25,755,899	\$19,947,563	4.43
Rate Impact Test (RIM)		\$24,925,348	\$13,222,315	(\$11,703,033)	0.53
Lifecycle Revenue Impacts (\$/kWh)					\$0.0006376
Discounted Participant Payback (years)					2.71



Table 63: Project Manager / Trade Ally – Custom Capital Projects with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0727	\$452,672	\$790,572	\$337,900	1.75
Total Resource Cost Test (TRC) No Adder	\$0.0727	\$452,672	\$728,403	\$275,731	1.61
Utility Cost Test (UCT)	\$0.0514	\$320,001	\$621,689	\$301,688	1.94
Participant Cost Test (PCT)		\$298,692	\$835,001	\$536,309	2.80
Rate Impact Test (RIM)		\$882,267	\$621,689	(\$260,578)	0.70
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000198
Discounted Participant Payback (years)					5.37

Table 64: Project Manager / Trade Ally – Drain for wheel line, hand line, portable main line, pivot, or linear with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1511	\$2,075	\$3,351	\$1,276	1.62
Total Resource Cost Test (TRC) No Adder	\$0.1511	\$2,075	\$3,161	\$1,086	1.52
Utility Cost Test (UCT)	\$0.0680	\$934	\$1,900	\$966	2.03
Participant Cost Test (PCT)		\$1,528	\$3,015	\$1,487	1.97
Rate Impact Test (RIM)		\$2,301	\$1,900	(\$401)	0.83
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000001
Discounted Participant Payback (years)					2.99

Table 65: Project Manager / Trade Ally – Gasket for wheel line, hand line, or portable main line with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0967	\$10,846	\$22,498	\$11,651	2.07
Total Resource Cost Test (TRC) No Adder	\$0.0967	\$10,846	\$20,945	\$10,099	1.93
Utility Cost Test (UCT)	\$0.0605	\$6,791	\$15,526	\$8,734	2.29
Participant Cost Test (PCT)		\$6,379	\$18,911	\$12,532	2.96
Rate Impact Test (RIM)		\$17,959	\$15,526	(\$2,433)	0.86
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000007
Discounted Participant Payback (years)					1.99



Table 66: Project Manager / Trade Ally – Impact Sprinkler, New or Rebuilt with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$1.3010	\$7,850	\$7,943	\$93	1.01
Total Resource Cost Test (TRC) No Adder	\$1.3010	\$7,850	\$7,860	\$10	1.00
Utility Cost Test (UCT)	\$0.0673	\$406	\$828	\$422	2.04
Participant Cost Test (PCT)		\$7,638	\$7,832	\$194	1.03
Rate Impact Test (RIM)		\$1,012	\$828	(\$184)	0.82
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					6.05

Table 67: Project Manager / Trade Ally – Irrigation Pump with VFD with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0791	\$475,900	\$880,059	\$404,159	1.85
Total Resource Cost Test (TRC) No Adder	\$0.0791	\$475,900	\$801,902	\$326,002	1.69
Utility Cost Test (UCT)	\$0.0559	\$336,425	\$781,570	\$445,145	2.32
Participant Cost Test (PCT)		\$314,016	\$816,938	\$502,922	2.60
Rate Impact Test (RIM)		\$958,490	\$781,570	(\$176,921)	0.82
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000275
Discounted Participant Payback (years)					3.84

Table 68: Project Manager / Trade Ally – Nozzle with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0651	\$3,919	\$10,475	\$6,555	2.67
Total Resource Cost Test (TRC) No Adder	\$0.0651	\$3,919	\$9,642	\$5,722	2.46
Utility Cost Test (UCT)	\$0.0495	\$2,978	\$8,331	\$5,353	2.80
Participant Cost Test (PCT)		\$1,522	\$7,884	\$6,362	5.18
Rate Impact Test (RIM)		\$8,971	\$8,331	(\$640)	0.93
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000004
Discounted Participant Payback (years)					1.12



Table 69: Project Manager / Trade Ally – Rotating Sprinkler with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$1.3010	\$7,850	\$7,943	\$93	1.01
Total Resource Cost Test (TRC) No Adder	\$1.3010	\$7,850	\$7,860	\$10	1.00
Utility Cost Test (UCT)	\$0.0673	\$406	\$828	\$422	2.04
Participant Cost Test (PCT)		\$7,638	\$7,832	\$194	1.03
Rate Impact Test (RIM)		\$1,012	\$828	(\$184)	0.82
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					6.05

Table 70: Project Manager / Trade Ally – Sprinkler Package - replace MESA with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1960	\$55,891	\$84,814	\$28,924	1.52
Total Resource Cost Test (TRC) No Adder	\$0.1960	\$55,891	\$80,902	\$25,011	1.45
Utility Cost Test (UCT)	\$0.0551	\$15,723	\$39,124	\$23,401	2.49
Participant Cost Test (PCT)		\$45,862	\$76,127	\$30,265	1.66
Rate Impact Test (RIM)		\$44,378	\$39,124	(\$5,254)	0.88
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000016
Discounted Participant Payback (years)					3.74

Table 71: Project Manager / Trade Ally – Wheel Line Leveler with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.3398	\$1,388	\$1,788	\$401	1.29
Total Resource Cost Test (TRC) No Adder	\$0.3398	\$1,388	\$1,733	\$345	1.25
Utility Cost Test (UCT)	\$0.0621	\$253	\$553	\$299	2.18
Participant Cost Test (PCT)		\$1,258	\$1,718	\$460	1.37
Rate Impact Test (RIM)		\$668	\$553	(\$115)	0.83
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000000
Discounted Participant Payback (years)					5.27

Table 72: Wattsmart Business Savings Non-Energy Impacts - PY2024 and PY2025

Sector	Delivery Channel	Measure	Annual Non-Energy Impacts per Measure	Total Installs	Measure Life	Total Present Value NEIs
Commercial	Midstream	Lighting	\$3,949	2	8	\$53,725
Commercial	Project Manager / Trade Ally	Adaptive Refrigeration Control	\$1,090	2	12	\$17,824
Commercial	Project Manager / Trade Ally	Additional Measures	\$9,883	2	15	\$188,862
Commercial	Project Manager / Trade Ally	Compressed Air	\$2,727	2	15	\$51,711
Commercial	Project Manager / Trade Ally	Energy Management	\$114,651	2	3	\$624,752
Commercial	Project Manager / Trade Ally	Fast Acting Doors	\$1,198	2	8	\$14,836
Commercial	Project Manager / Trade Ally	HVAC	\$2,320	4	14	\$78,937
Commercial	Project Manager / Trade Ally	Motors	\$3,726	2	15	\$71,203
Commercial	Project Manager / Trade Ally	Refrigeration	\$107,793	2	14	\$1,976,390
Commercial	Project Manager / Trade Ally	Wastewater	\$9,883	2	15	\$188,862
Commercial	Project Manager / Trade Ally	Lighting	\$156,721	2	12	\$2,604,592
Commercial	Small Business - Non Lighting	Anti-Sweat Heater Control, SMB	\$21	2	12	\$353
Commercial	Small Business - Non Lighting	DI HPWH, SMB	\$23	2	18	\$487
Commercial	Small Business - Non Lighting	ECM, SMB	\$97	2	15	\$1,855
Commercial	Small Business - Lighting	Lighting	\$6,914	2	12	\$114,847
Commercial	Small Business - Non Lighting	Small DHP, SMB	\$88	2	15	\$1,678
Industrial	Project Manager / Trade Ally	Additional Measures	\$9,060	2	15	\$173,123
Industrial	Project Manager / Trade Ally	Compressed Air	\$2,727	2	14	\$50,372
Industrial	Project Manager / Trade Ally	Custom Capital Projects	\$5,589	2	15	\$106,714
Industrial	Project Manager / Trade Ally	Energy Management	\$48,733	2	3	\$265,557
Industrial	Project Manager / Trade Ally	Motors	\$2,454	4	14	\$92,328
Industrial	Project Manager / Trade Ally	Refrigeration	\$9,582	2	14	\$175,679
Industrial	Project Manager / Trade Ally	Lighting	\$67,166	2	12	\$1,116,254
Irrigation	Project Manager / Trade Ally	Drain for wheel line, hand line, portable main line, pivot, or linear	\$127	2	6	\$1,261
Irrigation	Project Manager / Trade Ally	Gasket for wheel line, hand line, or portable main line	\$546	2	6	\$5,420
Irrigation	Project Manager / Trade Ally	Impact sprinkler, New or Rebuilt	\$626	2	6	\$7,032



Irrigation	Project Manager / Trade Ally	Irrigation Pump VFD	\$1,386	2	10	\$20,332
Irrigation	Project Manager / Trade Ally	Nozzle	\$132	2	6	\$1,310
Irrigation	Project Manager / Trade Ally	Rotating sprinkler	\$626	2	6	\$7,032
Irrigation	Project Manager / Trade Ally	Sprinkler Package - replace MESA	\$3,719	2	6	\$41,778
Irrigation	Project Manager / Trade Ally	Wheel line leveler	\$95	2	7	\$1,180



MEMORANDUM

To: Nancy Goddard and Peter Schaffer, Pacific Power
From: Dimitry Burdjalov, Andy Hudson, Dylan Royalty, Elizabeth Applegate, AEG
Date: September 12, 2023
Re: Washington Home Energy Savings Program Cost-Effectiveness Analysis – 2024-2025 Biennium

AEG estimated the cost-effectiveness of Pacific Power's Home Energy Savings Program in the state of Washington based on Program Year (PY) 2024 and PY2025 costs and savings estimates provided by Pacific Power.¹ The program passes the Participant Cost Test (PCT).

The memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
- Table 2: Annual Program Costs, Nominal - PY2024 and PY2025
- Table 3: Annual Savings - PY2024 and PY2025
- Table 4: Benefit/Cost Ratios by Measure Category - PY2024 and PY2025
- Table 5: Home Energy Savings Program Cost-Effectiveness Results - PY2024 and PY2025
- Table 6: Additional Measures Cost-Effectiveness Results - PY2024 and PY2025
- Table 7: Appliances Cost-Effectiveness Results - PY2024 and PY2025
- Table 8: Building Shell Cost-Effectiveness Results - PY2024 and PY2025
- Table 9: Electronics Cost-Effectiveness Results - PY2024 and PY2025
- Table 10: HVAC Cost-Effectiveness Results - PY2024 and PY2025
- Table 11: Lighting Cost-Effectiveness Results - PY2024 and PY2025
- Table 12: Water Heating Cost-Effectiveness Results - PY2024 and PY2025
- Table 13: Whole Home Cost-Effectiveness Results - PY2024 and PY2025
- Table 14: Home Energy Savings Program with NEIs Cost-Effectiveness Results - PY2024 and PY2025

¹ Consistent with Section 480-109-100 (10) (b) of the Washington Administrative Code, the Low-Income Weatherization program is excluded from this analysis.



- Table 15: Additional Measures with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 16: Appliances with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 17: Building Shell with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 18: Electronics with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 19: HVAC with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 20: Lighting with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 21: Water Heating with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 22: Water Heating with NEIs Cost-Effectiveness Results - PY2024 and PY2025
- Table 23: Home Energy Savings Non-Energy Impacts - PY2024 and PY2025

The following assumptions were utilized in the analysis:

- **Avoided Costs:** derived from PacifiCorp's 2023 Integrated Resource Plan (IRP) Preferred Portfolio "W10 SC CETA", converted into annual values using load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, non-energy impacts (NEIs), measure lives, incentive levels, program delivery, and portfolio costs were based on estimates provided by PacifiCorp.
- **Net-to-Gross (NTG):** ratios are assumed to be 1.0, consistent with condition (8)(a) to Order 01 in Docket UE-152-072.
- **Retail Rates:** 2021 rates provided by PacifiCorp and escalated by inflation for future years.

The following tables summarize cost-effectiveness assumptions and results for the Washington Home Energy Savings Program. The cost-effectiveness analysis inputs are shown in Table 1 through Table 3 below:

Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.77%
Residential Line Loss	7.68%
Residential Energy Rate (\$/kWh)	\$0.094
Inflation Rate ¹	2.27%
Net-to-Gross	100%
Realization Rate	100%



Table 2: Annual Program Costs, Nominal - PY2024 and PY2025

Measure Category	Program Delivery	Utility Admin	Incentives	Total Utility Budget	Gross Customer Costs
Additional Measures	\$6,385	\$123	\$900	\$7,408	\$1,555
Appliances	\$31,579	\$618	\$30,554	\$62,751	\$22,264
Building Shell	\$156,059	\$3,061	\$191,916	\$351,037	\$814,213
Electronics	\$15,104	\$297	\$4,800	\$20,201	\$8,285
HVAC	\$8,187,472	\$160,515	\$5,059,190	\$13,407,177	\$12,824,696
Lighting	\$328,236	\$6,435	\$56,526	\$391,198	\$70,030
Water Heating	\$105,328	\$2,055	\$70,500	\$177,884	\$65,366
Whole Home	\$95,542	\$1,879	\$73,750	\$171,170	\$120,362
Total Program	\$8,925,705	\$174,985	\$5,488,136	\$14,588,826	\$13,926,772

Table 3: Annual Savings in kWh - PY2024 and PY2025

Measure Category	Gross kWh Savings at Site	Net kWh Savings at Site	Gross kWh Savings at Generator	Net kWh Savings at Generator	Measure Life
Additional Measures	6,741	5,798	7,259	6,243	10
Appliances	33,373	33,373	35,935	35,935	13
Building Shell	164,947	136,906	177,609	147,415	43
Electronics	15,967	13,732	17,193	14,786	9
HVAC	8,653,417	8,134,212	9,317,653	8,758,594	18
Lighting	350,794	277,127	377,721	298,399	3
Water Heating	111,288	111,288	119,831	119,831	13
Whole Home	101,000	86,860	108,753	93,527	28
Total Program	9,437,528	8,799,296	10,161,953	9,474,730	18

Table 4 presents the cost-effectiveness results by measure category and the total program with and without non-energy impacts (NEIs). The program is cost-effective from the PCT perspective.



Table 4: Benefit/Cost Ratios by Measure Category - PY2024 and PY2025

Measure Category	PTRC	TRC	UCT	PCT	RIM
Additional Measures	0.53	0.48	0.52	3.68	0.32
Additional Measures (with NEIs)	0.53	0.48	0.52	3.68	0.32
Appliances	0.56	0.51	0.44	2.94	0.29
Appliances (with NEIs)	1.06	1.01	0.44	4.15	0.29
Building Shell	0.19	0.17	0.48	0.57	0.27
Building Shell (with NEIs)	0.98	0.97	0.48	1.52	0.27
Electronics	0.49	0.44	0.52	1.84	0.34
Electronics (with NEIs)	0.60	0.55	0.52	2.15	0.34
HVAC	0.39	0.35	0.55	1.19	0.31
HVAC (with NEIs)	0.49	0.46	0.55	1.37	0.31
Lighting	0.27	0.25	0.26	1.94	0.21
Lighting (with NEIs)	0.36	0.34	0.26	2.45	0.21
Water Heating	0.55	0.50	0.49	2.81	0.30
Water Heating (with NEIs)	0.56	0.51	0.49	2.85	0.30
Whole Home	0.46	0.42	0.53	1.81	0.29
Whole Home (with NEIs)	0.46	0.42	0.53	1.81	0.29
Total Program	0.38	0.34	0.54	1.17	0.31
Total Program (with NEIs)	0.51	0.48	0.54	1.40	0.31

Tables 5 through 13 present detailed cost-effectiveness results for the total program and for each measure category, excluding NEIs.

Table 5: Home Energy Savings Program Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2494	\$22,249,652	\$8,403,105	(\$13,846,547)	0.38
Total Resource Cost Test (TRC) No Adder	\$0.2494	\$22,249,652	\$7,639,186	(\$14,610,466)	0.34
Utility Cost Test (UCT)	\$0.1580	\$14,095,182	\$7,639,186	(\$6,455,996)	0.54
Participant Cost Test (PCT)		\$13,457,070	\$15,778,399	\$2,321,329	1.17
Rate Impact Test (RIM)		\$24,570,981	\$7,639,186	(\$16,931,795)	0.31
Lifecycle Revenue Impacts (\$/kWh)					\$0.0003650
Discounted Participant Payback (years)					14.33



Table 6: Additional Measures Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1835	\$7,722	\$4,092	(\$3,630)	0.53
Total Resource Cost Test (TRC) No Adder	\$0.1835	\$7,722	\$3,720	(\$4,002)	0.48
Utility Cost Test (UCT)	\$0.1686	\$7,094	\$3,720	(\$3,374)	0.52
Participant Cost Test (PCT)		\$1,490	\$5,482	\$3,993	3.68
Rate Impact Test (RIM)		\$11,715	\$3,720	(\$7,995)	0.32
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000003
Discounted Participant Payback (years)					2.72

Table 7: Appliances Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1767	\$52,550	\$29,591	(\$22,960)	0.56
Total Resource Cost Test (TRC) No Adder	\$0.1767	\$52,550	\$26,901	(\$25,650)	0.51
Utility Cost Test (UCT)	\$0.2036	\$60,532	\$26,901	(\$33,631)	0.44
Participant Cost Test (PCT)		\$21,469	\$63,025	\$41,556	2.94
Rate Impact Test (RIM)		\$94,106	\$26,901	(\$67,206)	0.29
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000022
Discounted Participant Payback (years)					4.43

Table 8: Building Shell Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.4827	\$940,709	\$180,516	(\$760,193)	0.19
Total Resource Cost Test (TRC) No Adder	\$0.4827	\$940,709	\$164,106	(\$776,604)	0.17
Utility Cost Test (UCT)	\$0.1741	\$339,273	\$164,106	(\$175,168)	0.48
Participant Cost Test (PCT)		\$786,919	\$448,200	(\$338,719)	0.57
Rate Impact Test (RIM)		\$601,990	\$164,106	(\$437,885)	0.27
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000089
Discounted Participant Payback (years)					75.49



Table 9: Electronics Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2455	\$22,934	\$11,218	(\$11,715)	0.49
Total Resource Cost Test (TRC) No Adder	\$0.2455	\$22,934	\$10,199	(\$12,735)	0.44
Utility Cost Test (UCT)	\$0.2094	\$19,559	\$10,199	(\$9,361)	0.52
Participant Cost Test (PCT)		\$8,022	\$14,770	\$6,747	1.84
Rate Impact Test (RIM)		\$29,681	\$10,199	(\$19,482)	0.34
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000009
Discounted Participant Payback (years)					4.89

Table 10: HVAC Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2435	\$20,457,412	\$7,883,419	(\$12,573,993)	0.39
Total Resource Cost Test (TRC) No Adder	\$0.2435	\$20,457,412	\$7,166,745	(\$13,290,667)	0.35
Utility Cost Test (UCT)	\$0.1542	\$12,953,679	\$7,166,745	(\$5,786,934)	0.55
Participant Cost Test (PCT)		\$12,391,966	\$14,727,453	\$2,335,487	1.19
Rate Impact Test (RIM)		\$22,792,899	\$7,166,745	(\$15,626,154)	0.31
Lifecycle Revenue Impacts (\$/kWh)					\$0.0004415
Discounted Participant Payback (years)					14.51

Table 11: Lighting Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.5194	\$391,022	\$106,526	(\$284,496)	0.27
Total Resource Cost Test (TRC) No Adder	\$0.5194	\$391,022	\$96,841	(\$294,180)	0.25
Utility Cost Test (UCT)	\$0.5021	\$377,973	\$96,841	(\$281,132)	0.26
Participant Cost Test (PCT)		\$67,668	\$131,491	\$63,823	1.94
Rate Impact Test (RIM)		\$454,844	\$96,841	(\$358,003)	0.21
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000295
Discounted Participant Payback (years)					1.46



Table 12: Water Heating Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1717	\$166,464	\$91,471	(\$74,993)	0.55
Total Resource Cost Test (TRC) No Adder	\$0.1717	\$166,464	\$83,155	(\$83,309)	0.50
Utility Cost Test (UCT)	\$0.1768	\$171,406	\$83,155	(\$88,251)	0.49
Participant Cost Test (PCT)		\$62,990	\$177,037	\$114,047	2.81
Rate Impact Test (RIM)		\$280,512	\$83,155	(\$197,356)	0.30
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000068
Discounted Participant Payback (years)					4.63

Table 13: Whole Home Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1892	\$210,839	\$96,271	(\$114,567)	0.46
Total Resource Cost Test (TRC) No Adder	\$0.1892	\$210,839	\$87,519	(\$123,319)	0.42
Utility Cost Test (UCT)	\$0.1487	\$165,665	\$87,519	(\$78,146)	0.53
Participant Cost Test (PCT)		\$116,546	\$210,940	\$94,394	1.81
Rate Impact Test (RIM)		\$305,233	\$87,519	(\$217,713)	0.29
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000051
Discounted Participant Payback (years)					15.47

In addition to the energy benefits reported above, the Home Energy Savings Program measures offer significant non-energy impacts (NEIs). Tables 14 through 22 present detailed cost-effectiveness results for the total program and each measure category with the inclusion of NEIs. Table 23 details the non-energy impacts included in this analysis.



Table 14: Home Energy Savings Program with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2494	\$22,249,652	\$11,420,721	(\$10,828,931)	0.51
Total Resource Cost Test (TRC) No Adder	\$0.2494	\$22,249,652	\$10,656,802	(\$11,592,850)	0.48
Utility Cost Test (UCT)	\$0.1580	\$14,095,182	\$7,639,186	(\$6,455,996)	0.54
Participant Cost Test (PCT)		\$13,457,070	\$18,796,015	\$5,338,945	1.40
Rate Impact Test (RIM)		\$24,570,981	\$7,639,186	(\$16,931,795)	0.31
Lifecycle Revenue Impacts (\$/kWh)					\$0.0003650
Discounted Participant Payback (years)					12.26

Table 15: Additional Measures with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1835	\$7,722	\$4,092	(\$3,630)	0.53
Total Resource Cost Test (TRC) No Adder	\$0.1835	\$7,722	\$3,720	(\$4,002)	0.48
Utility Cost Test (UCT)	\$0.1686	\$7,094	\$3,720	(\$3,374)	0.52
Participant Cost Test (PCT)		\$1,490	\$5,482	\$3,993	3.68
Rate Impact Test (RIM)		\$11,715	\$3,720	(\$7,995)	0.32
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000003
Discounted Participant Payback (years)					2.72

Table 16: Appliances with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1767	\$52,550	\$55,726	\$3,176	1.06
Total Resource Cost Test (TRC) No Adder	\$0.1767	\$52,550	\$53,036	\$486	1.01
Utility Cost Test (UCT)	\$0.2036	\$60,532	\$26,901	(\$33,631)	0.44
Participant Cost Test (PCT)		\$21,469	\$89,161	\$67,691	4.15
Rate Impact Test (RIM)		\$94,106	\$26,901	(\$67,206)	0.29
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000022
Discounted Participant Payback (years)					3.20



Table 17: Building Shell with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.4827	\$940,709	\$925,249	(\$15,460)	0.98
Total Resource Cost Test (TRC) No Adder	\$0.4827	\$940,709	\$908,838	(\$31,871)	0.97
Utility Cost Test (UCT)	\$0.1741	\$339,273	\$164,106	(\$175,168)	0.48
Participant Cost Test (PCT)		\$786,919	\$1,192,933	\$406,014	1.52
Rate Impact Test (RIM)		\$601,990	\$164,106	(\$437,885)	0.27
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000089
Discounted Participant Payback (years)					29.17

Table 18: Electronics with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2455	\$22,934	\$13,699	(\$9,235)	0.60
Total Resource Cost Test (TRC) No Adder	\$0.2455	\$22,934	\$12,679	(\$10,255)	0.55
Utility Cost Test (UCT)	\$0.2094	\$19,559	\$10,199	(\$9,361)	0.52
Participant Cost Test (PCT)		\$8,022	\$17,250	\$9,227	2.15
Rate Impact Test (RIM)		\$29,681	\$10,199	(\$19,482)	0.34
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000009
Discounted Participant Payback (years)					4.19

Table 19: HVAC with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.2435	\$20,457,412	\$10,091,098	(\$10,366,315)	0.49
Total Resource Cost Test (TRC) No Adder	\$0.2435	\$20,457,412	\$9,374,423	(\$11,082,989)	0.46
Utility Cost Test (UCT)	\$0.1542	\$12,953,679	\$7,166,745	(\$5,786,934)	0.55
Participant Cost Test (PCT)		\$12,391,966	\$16,935,131	\$4,543,165	1.37
Rate Impact Test (RIM)		\$22,792,899	\$7,166,745	(\$15,626,154)	0.31
Lifecycle Revenue Impacts (\$/kWh)					\$0.0004415
Discounted Participant Payback (years)					12.63



Table 20: Lighting with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.5194	\$391,022	\$140,857	(\$250,165)	0.36
Total Resource Cost Test (TRC) No Adder	\$0.5194	\$391,022	\$131,172	(\$259,849)	0.34
Utility Cost Test (UCT)	\$0.5021	\$377,973	\$96,841	(\$281,132)	0.26
Participant Cost Test (PCT)		\$67,668	\$165,822	\$98,154	2.45
Rate Impact Test (RIM)		\$454,844	\$96,841	(\$358,003)	0.21
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000295
Discounted Participant Payback (years)					1.16

Table 21: Water Heating with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1717	\$166,464	\$93,730	(\$72,734)	0.56
Total Resource Cost Test (TRC) No Adder	\$0.1717	\$166,464	\$85,414	(\$81,050)	0.51
Utility Cost Test (UCT)	\$0.1768	\$171,406	\$83,155	(\$88,251)	0.49
Participant Cost Test (PCT)		\$62,990	\$179,296	\$116,306	2.85
Rate Impact Test (RIM)		\$280,512	\$83,155	(\$197,356)	0.30
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000068
Discounted Participant Payback (years)					4.57

Table 22: Whole Home with NEIs Cost-Effectiveness Results - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.1892	\$210,839	\$96,271	(\$114,567)	0.46
Total Resource Cost Test (TRC) No Adder	\$0.1892	\$210,839	\$87,519	(\$123,319)	0.42
Utility Cost Test (UCT)	\$0.1487	\$165,665	\$87,519	(\$78,146)	0.53
Participant Cost Test (PCT)		\$116,546	\$210,940	\$94,394	1.81
Rate Impact Test (RIM)		\$305,233	\$87,519	(\$217,713)	0.29
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000051
Discounted Participant Payback (years)					15.47



Table 23: Home Energy Savings Non-Energy Impacts - PY2024 and PY2025

Measure Category	Annual Non-Energy Impacts per Measure	Total Installs	Measure Life	Total Present Value NEIs
Electronics	\$3.04	120	9	\$2,480
Appliances	\$16.70	171	14	\$26,135
HVAC	\$31.80	6,728	15	\$2,207,678
Water Heating	\$3.46	75	13	\$2,259
Building Shell	\$0.10	540,091	45	\$739,751
Lighting	\$1.34	9,421	3	\$34,331



MEMORANDUM

To: Nancy Goddard and Peter Schaffer, Pacific Power
From: Dimitry Burdjalov, Andy Hudson, Dylan Royalty, Elizabeth Applegate, AEG
Date: September 15, 2023
Re: Washington Home Energy Report Program Cost-Effectiveness Analysis – 2024-2025 Biennium

AEG estimated the cost-effectiveness of Pacific Power’s overall energy efficiency portfolio and individual programs in the state of Washington based on Program Year (PY) 2024 and PY2025 costs and savings estimates provided by Pacific Power.¹ The Home Energy Report program passes the following cost effectiveness tests: Total Resource Cost Test (TRC), the PacifiCorp Total Resource Cost Test (PTRC), the Utility Cost Test (UCT), and the Participant Cost Test (PCT).

The memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
- Table 2: Annual Program Costs, Nominal - PY2024 and PY2025
- Table 3: Annual Savings - PY2024 and PY2025
- Table 4: HER Benefit/Cost Ratios - PY2024 and PY2025

The following assumptions were utilized in the analysis:

- **Avoided Costs:** derived from PacifiCorp’s 2023 Integrated Resource Plan (IRP) Preferred Portfolio “W10 SC CETA”, converted into annual values using load shapes from the same IRP.
- **Modeling Inputs:** measure savings, costs, non-energy impacts (NEIs), measure lives, incentive levels, program delivery, and portfolio costs were based on estimates provided by PacifiCorp.
- **Net-to-Gross (NTG):** ratios are assumed to be 1.0, consistent with condition (8)(a) to Order 01 in Docket UE-152-072.
- **Retail Rates:** 2022 rates provided by PacifiCorp and escalated by inflation for future years.

¹ Consistent with Section 480-109-100 (10) (b) of the Washington Administrative Code, the Low-Income Weatherization program is excluded from this analysis.



The following tables summarize cost-effectiveness assumptions and results for the Washington HER program.

Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.77%
Residential Line Loss	7.68%
Residential Energy Rate (\$/kWh)	\$0.0944
Inflation Rate ²	2.27%
Measure Life	1
NTG	100%
Realization Rate	100%

Table 2: Annual Program Costs, Nominal - PY2024 and PY2025

Program Year	Program Delivery	Utility Admin	Incentives	Total Utility Budget
2024	\$283,175	\$46,927	\$0	\$330,101
2025	\$290,327	\$48,100	\$0	\$338,427
Total Program	\$573,502	\$95,027	\$0	\$668,529

Table 3: Annual Savings, Nominal - PY2024 and PY2025

Program Year	Gross kWh Savings at Site	Net kWh Savings at Site	Gross kWh Savings at Generator	Net kWh Savings at Generator
2024	4,212,000	4,212,000	4,535,313	4,535,313
2025	3,741,000	3,741,000	4,028,159	4,028,159
Total Program	7,953,000	7,953,000	8,563,472	8,563,472

Table 4: HER Benefit/Cost Ratios - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0839	\$647,070	\$1,064,554	\$417,484	1.65
Total Resource Cost Test (TRC) No Adder	\$0.0839	\$647,070	\$967,776	\$320,707	1.50
Utility Cost Test (UCT)	\$0.0839	\$647,070	\$967,776	\$320,707	1.50
Participant Cost Test (PCT)		\$0	\$769,993	\$769,993	n/a
Rate Impact Test (RIM)		\$1,417,063	\$967,776	(\$449,287)	0.68
Lifecycle Revenue Impacts (\$/kWh)					\$0.0001733
Discounted Participant Payback (years)					0.00

² Future rates determined using a 2.27% annual escalator.



MEMORANDUM

To: Nancy Goddard and Peter Schaffer, Pacific Power
From: Dimitry Burdjalov, Andy Hudson, Dylan Royalty, Elizabeth Applegate, AEG
Date: September 15, 2023
Re: Washington NEEA Cost-Effectiveness Analysis – 2024-2025 Biennium

AEG estimated the cost-effectiveness of Pacific Power's allocation of the Northwest Energy Efficiency Alliance's (NEEA's) Washington business plan in the state of Washington based on Program Year (PY) 2024 and PY2025 costs and savings estimates provided by Pacific Power. The NEEA program partnership passes the following cost effectiveness tests: Total Resource Cost Test (TRC), the PacifiCorp Total Resource Cost Test (PTRC), the Utility Cost Test (UCT), and the Participant Cost Test (PCT).

The memo provides analysis inputs and results in the following tables:

- Table 1: Cost-Effectiveness Analysis Inputs
- Table 2: Annual Program Costs, Nominal - PY2024 and PY2025
- Table 3: Annual Savings - PY2024 and PY2025
- Table 4: NEEA Benefit/Cost Ratios - PY2024 and PY2025

The NEEA business plan will be implemented in PY2024-2025. The following assumptions were utilized in the analysis:

- Avoided Costs: derived from PacifiCorp's 2023 Integrated Resource Plan (IRP) Preferred Portfolio "W10 SC CETA", converted into annual values using load shapes from the same IRP.
- Modeling Inputs: measure savings, costs, non-energy impacts (NEIs), measure lives, incentive levels, program delivery, and portfolio costs were based on estimates provided by PacifiCorp.
- Net-to-Gross (NTG): ratios are assumed to be 1.0, consistent with condition (8)(a) to Order 01 in Docket UE-152-072.
- Retail Rates: 2022 rates provided by PacifiCorp and escalated by inflation for future years.



Tables 1 through 3 below summarize cost-effectiveness assumptions and results for the PacifiCorp's allocation of NEEA's Washington business plan.

Table 1: Cost-Effectiveness Analysis Inputs

Parameter	Value
Discount Rate	6.77%
Residential Line Loss	7.68%
Commercial Line Loss	7.60%
Industrial Line Loss	6.82%
Residential Energy Rate (\$/kWh)	\$0.0944
Commercial Energy Rate (\$/kWh)	\$0.0917
Industrial Energy Rate (\$/kWh)	\$0.0746
Inflation Rate ¹	2.27%
Net-to-Gross	100%
Realization Rate	100%

Table 2: Annual Program Costs, Nominal - PY2024 and PY2025

Parameter	Value
Program Delivery	\$1,921,127
Utility Admin	\$18,404
Incentives	\$0
Total Utility Budget	\$1,939,531
Gross Customer Costs	\$0

Table 3: Annual Savings, Nominal - PY2024 and PY2025

Parameter	Value
Gross kWh Savings at Site	10,131,744
Realization Rate	100%
Adjusted Gross kWh Savings at Site	10,131,744
Net to Gross Ratio	100%
Net kWh Savings at Site	10,131,744
Measure Life	15.47

¹ Future rates determined using a 2.27% annual escalator.



Table 4 presents the Washington NEEA business plan cost-effectiveness; the program is cost-effective for the UCT, PCT, PacifiCorp TRC, and TRC tests. Note that since no gross customer costs have been analyzed, the PCT is cost-effective by default with an immediate participant payback.

Table 4: NEEA Benefit/Cost Ratios - PY2024 and PY2025

Cost-Effectiveness Test	Levelized \$/kWh	NPV Costs	NPV Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0195	\$1,876,795	\$9,600,841	\$7,724,046	5.12
Total Resource Cost Test (TRC) No Adder	\$0.0195	\$1,876,795	\$8,728,037	\$6,851,242	4.65
Utility Cost Test (UCT)	\$0.0195	\$1,876,795	\$8,728,037	\$6,851,242	4.65
Participant Cost Test (PCT)		\$0	\$11,047,965	\$11,047,965	n/a
Rate Impact Test (RIM)		\$12,924,760	\$8,728,037	(\$4,196,723)	0.68
Lifecycle Revenue Impacts (\$/kWh)					\$0.0002504
Discounted Participant Payback (years)					0.00