



1407 W. North Temple, Suite 330
Salt Lake City, Utah 84116

May 4, 2021

VIA ELECTRONIC FILING

Public Service Commission of Utah
Heber M. Wells Building, 4th Floor
160 East 300 South
Salt Lake City, UT 84114

Attn: Gary Widerburg
Commission Secretary

RE: Advice No. 21-04
Proposed Changes to Schedule 111, Residential Energy Efficiency Program
Docket No. 21-035-T06

Enclosed for electronic filing are the proposed tariff sheets associated with Tariff P.S.C.U. No. 51 of PacifiCorp, d.b.a. Rocky Mountain Power (the “Company”), applicable to electric service in the State of Utah. Pursuant to the requirement of Rule R746-405-2(D), the Company states that the proposed tariff sheets do not constitute a violation of state law or Commission rule. The Company respectfully requests an effective date of June 4, 2021 for these changes.

First Revision of Sheet No. 111.5 Schedule 111 Residential Energy Efficiency Program

The purpose of this filing is to propose updated incentives and incentive structure for the Custom Multifamily Program (“Program”) to provide additional benefits, align with market conditions, and maintain cost-effectiveness. Proposed changes to the Schedule 111 tariff sheets are included as Exhibit A. These changes align with targets illustrated in the table below, filed in the Demand Side Management (“DSM”) Deferred Account and Forecast Report on November 2, 2020, in Docket No. 20-035-31.

2021 Budget and Savings Forecast

***	2021 MWH Savings Forecast	2021 Budget Forecast
Wattsmart Homes	53,566	\$15,500,000

DESCRIPTION OF CHANGES

Proposed adjustments are listed below, with further explanation provided in subsequent sections.

1. Increase maximum incentive amounts in Schedule 111.5, Table 7; and
2. Change the flat rate incentive structure to a measure category based structure.

BACKGROUND

The Custom Multi-Family Program was originally proposed and approved in Docket No. 17-035-T12, and has remained materially the same since then. The Program continues to offer participating customers education on the benefits of energy efficiency, an energy audit/assessment of their property, identifying energy savings measures that could be installed, the associated savings estimates, and an explanation of the life-cycle and non-financial benefits that would result. Additionally, the Program helps multi-family property owners gain access to additional incentives and rebates offered by other utilities and federal agencies, tax credits, and financing.

The Program continues to target the hard-to-reach multi-family sector, with participation focused efforts on reaching 50 percent low income customers and 50 percent market rate customers. The Program defines low income customers as properties where the majority of households earn less than 80 percent of the Area Median Income, and market rate customers earning more than 80 percent of the Area Median Income.

INCENTIVE STRUCTURE

The Program’s current incentive structure pays a flat rate amount of either \$0.25 or \$0.30 per kilowatt hour up to 100 percent or 70 percent of total project costs for low income and market rate customers, respectively. Eligible equipment for projects currently include HVAC, Windows, Lighting, Appliances, Building Shell, Domestic Hot Water, Heat Pump Water Heaters, and New Construction.

Since the inception of the Program in 2017, the market has transformed with respect to lighting and other products being more widely adopted, requiring less marketing and incentivization than other measure categories, such as HVAC and Windows. To account for this market transformation, it is proposed to shift the Program incentive structure from a flat-rate offering to an offering based on individual measure categories. This will enable the Program to offer and promote increased incentives for measure categories with higher cost and more energy savings, while offering lower incentives for the more adopted categories that require less marketing and incentivization. Additionally, in order to offer higher incentives for specific measure categories, it is proposed to increase the maximum incentive amounts in Table 7 in the Schedule 111 tariff. Specifically, it is proposed to increase the Low Income and Market Rate maximum incentives to be \$0.40 and \$0.35 per kilowatt hour, respectively. Table 1 below reflects the current maximum amounts as well as the proposed amounts.

Table 1 – Custom Multifamily Program Maximum Incentives

Multifamily Property Type	Category	Current Maximum Incentive	Proposed Maximum Incentive
Low Income	Properties where the majority of households earn less than 80% of the Area Median Income	\$0.30/kWh up to 100% of total project costs	\$0.40/kWh up to 100% of total project costs
Market Rate	Properties where the majority of households earn more than 80% of the Area Median Income	\$0.25/kWh up to 70% of total project costs	\$0.35/kWh up to 70% of total project costs

Table 2 below includes the proposed incentive amounts for each measure category based on the proposed maximum amounts in Table 1 above.

Table 2 – Proposed Measure Category Incentive Structure

Measure Category	Market Rate Incentive (\$/kWh)	Low Income Incentive (\$/kWh)
HVAC	\$0.30	\$0.36
Windows	\$0.30	\$0.36
Lighting	\$0.10	\$0.12
Appliances	\$0.175	\$0.21
Building Shell	\$0.175	\$0.21
Domestic Hot Water	\$0.175	\$0.21
Heat Pump Water Heater	\$0.30	\$0.36
New Construction	\$0.20	\$0.24

Table 2 represents the proposed measure category incentive amounts to be offered for purposes of this filing, and will be posted and maintained on the Company’s website, consistent with the other offerings from Schedule 111. Subsequently, if there is a need to update the offered incentive amounts or measure categories from Table 2 above, it will be done via the pre-established 45-day notice process. If there is a need to change the approved maximum incentive amounts in Table 1 above and Schedule 111, it will be done via Advice Letter for Commission approval.

COST EFFECTIVENESS

The cost effectiveness analysis for the Custom Multi-Family Program, attached hereto as Exhibit B, was based on the maximum “up to” incentive levels. Table 3 below (included as Table 5 in Exhibit B), presents the expected cost effectiveness of the Program for years 2021-2022 assuming the proposed changes in this filing. Additional details and inputs are included in Exhibit B. Sensitivity analyses are also included as Exhibits C and D. The Program is expected to remain cost effective from the Utility Cost Test perspective under all scenarios.

Table 3 – MF Program Level Cost-Effectiveness Results - PY2021 and PY2022 (Expected Participation)

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0718	\$27,141,176	\$23,225,244	-\$3,915,933	0.86
Total Resource Cost Test (TRC) No Adder	\$0.0718	\$27,141,176	\$21,113,858	-\$6,027,318	0.78
Utility Cost Test (UCT)	\$0.0450	\$17,016,297	\$21,113,858	\$4,097,561	1.24
Rate Impact Test (RIM)		\$62,007,523	\$21,113,858	-\$40,893,665	0.34
Participant Cost Test (PCT)		\$27,596,056	\$65,189,502	\$37,593,446	2.36
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000018739

STAKEHOLDER FEEDBACK

On March 23, 2021, the Company held a DSM Steering Committee meeting and discussed these proposed changes. On April 16, 2021, the Company circulated a draft of this advice letter to Steering Committee members for initial review and comment. No concerns were raised by Steering Committee members.

It is respectfully requested that all formal correspondence and staff requests regarding this matter be addressed to:

By E-mail (preferred): datarequest@pacificorp.com
 michael.snow@pacificorp.com

By regular mail: Data Request Response Center
 PacifiCorp
 825 NE Multnomah Blvd., Suite 2000
 Portland, OR 97232

Informal inquiries regarding this matter may be directed to me at (801) 220-4214.

Sincerely,

A handwritten signature in blue ink that reads "Michael S. Snow". The signature is written in a cursive, flowing style.

Michael S. Snow
Manager, Regulatory Affairs

Enclosures

Exhibit A

ELECTRIC SERVICE SCHEDULE NO. 111 – Continued

Table 5 – New Construction Incentives

Measure Type	Customer/Mid-Market Incentive “up to”
Smart Thermostat	\$50
Central Air Conditioner	\$350
Whole Home	\$1,000
Heat Pump Water Heater	\$800
Heat Pump	\$2,000

Notes for Table 5:

1. Qualifying equipment receiving incentives within this table may not receive equipment purchase and installation incentives within other tables in this Schedule.
2. Customers that receive an incentive for the Whole Home offering may not receive an incentive for stand-alone offerings that impact the HERS Index.

Table 6 – Insulation Incentives

Measure Type	Customer/Mid-Market Incentive “up to”
Insulation	\$0.65/square foot

Table 7 – Custom Multifamily Program

Multifamily Property Type	Category	Incentive “up to”
Low Income	Properties where the majority of households earn less than 80% of Area Median Income.	\$0. 34 0/kWh up to 100% of total project costs
Market Rate	Properties where the majority of households earn more than 80% of Area Median Income	\$0. 23 5/kWh up to 70% of total project costs

Notes for Table 7:

1. Qualifying equipment receiving incentives within this table may not receive equipment purchase and installation incentives within other tables in this Schedule.
2. Outside lighting and common areas billed under non-residential rate schedules are eligible to receive incentives within this table, but may not receive additional equipment purchase and installation incentives within other Company offered programs.

Issued by authority of Report and Order of the Public Service Commission of Utah in ~~Docket No. 20-035-04~~ Advice No. 21-04

FILED: ~~May 4, 2021~~ January 13, 2021
1, 2021

EFFECTIVE: ~~June 4, 2021~~ January

ELECTRIC SERVICE SCHEDULE NO. 111 – Continued
Table 5 – New Construction Incentives

Measure Type	Customer/Mid-Market Incentive “up to”
Smart Thermostat	\$50
Central Air Conditioner	\$350
Whole Home	\$1,000
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Notes for Table 5:

1. Qualifying equipment receiving incentives within this table may not receive equipment purchase and installation incentives within other tables in this Schedule.
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Table 6 – Insulation Incentives

Measure Type	Customer/Mid-Market Incentive “up to”
Insulation	\$0.65/square foot

Table 7 – Custom Multifamily Program

Multifamily Property Type	Category	Incentive “up to”
Low Income	Properties where the majority of households earn less than 80% of Area Median Income.	\$0.40/kWh up to 100% of total project costs
Market Rate	Properties where the majority of households earn more than 80% of Area Median Income	\$0.35/kWh up to 70% of total project costs

Notes for Table 7:

1. Qualifying equipment receiving incentives within this table may not receive equipment purchase and installation incentives within other tables in this Schedule.
2. Outside lighting and common areas billed under non-residential rate schedules are eligible to receive incentives within this table, but may not receive additional equipment purchase and installation incentives within other Company offered programs.

Exhibit B



Memorandum

To: Jillian Fredrickson, PacifiCorp
From: David Basak, Guidehouse
Date: April 16, 2021
Re: Cost Effectiveness for the Utah Multifamily Program - Expected Participation

Guidehouse has developed this memo in response to PacifiCorp's proposed Multifamily Program cost-effectiveness modeling needs in the state of Utah. Each scenario is analyzed using modeled assumptions provided by PacifiCorp. These scenarios utilize the following assumptions:

- **Scenarios:** Ran cost-effectiveness for program years 2021 and 2022.
- **Avoided Costs:** Guidehouse performed a custom analysis of calculating avoided costs by using the *2019 IRP Decrement* and applied against Utah specific residential end-use specific load shapes.
- **Energy Rates:** Utilized the rates provided by PacifiCorp for PY2021 and applied an escalation of 2.28% to arrive at estimated energy rates for PY2022.
- **Line Loss Factors:** Residential line loss factor utilized throughout the analysis.

This memo will begin by addressing the inputs used in the analysis of the Utah HES Program. The cost-effectiveness inputs are as follows:

Table 1 - Utility Inputs

Parameter	PY2021	PY2022
Discount Rate	6.92%	6.92%
Residential Line Loss	6.36%	6.36%
Residential Energy Rate (\$/kWh) ¹	\$0.1092	\$0.1117
Inflation Rate	2.28%	2.28%

¹ Future rates determined using a 2.28% annual escalator.

Table 2 – Program Costs by Scenario and Program Year (Expected Participation)

Program Year	Utility Admin	Program Delivery	Program Development	Incentives	Total Utility Costs	Gross Customer Costs
2021	\$8,000	\$1,000,000	\$5,000	\$7,499,149	\$8,512,149	\$13,798,028
2022	\$5,000	\$1,000,000	\$0	\$7,499,149	\$8,504,149	\$13,798,028
2021-2022	\$13,000	\$2,000,000	\$5,000	\$14,998,297	\$17,016,297	\$27,596,056

Table 3 – Program Savings by Scenario and Program Year (Expected Participation)

Program Year	Gross kWh Savings	Realization Rate	Adjusted Gross kWh Savings	Net to Gross Ratio	Net kWh Savings	Measure Life
2021	19,997,730	100%	19,997,730	90%	17,989,427	15
2022	19,997,730	100%	19,997,730	90%	17,989,427	15
2021-2022	39,995,460	100%	39,995,460	90%	35,978,854	15

Table 4 - Benefit/Cost Ratios by Measure Category (Expected Participation)

Program Year	PTRC	TRC	UCT	RIM	PCT
2021	0.83	0.76	1.21	0.33	2.34
2022	0.88	0.80	1.28	0.35	2.38
2021-2022	0.86	0.78	1.24	0.34	2.36

Table 5 through Table 7 provide cost-effectiveness results for the combination of PY2021 and PY2022 followed by the individual program year results.

**Table 5 – MF Program Level Cost-Effectiveness Results - PY2021 and PY2022
(Expected Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0718	\$27,141,176	\$23,225,244	-\$3,915,933	0.86
Total Resource Cost Test (TRC) No Adder	\$0.0718	\$27,141,176	\$21,113,858	-\$6,027,318	0.78
Utility Cost Test (UCT)	\$0.0450	\$17,016,297	\$21,113,858	\$4,097,561	1.24
Rate Impact Test (RIM)		\$62,007,523	\$21,113,858	-\$40,893,665	0.34
Participant Cost Test (PCT)		\$27,596,056	\$65,189,502	\$37,593,446	2.36
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000018739

**Table 6 – MF Program Level Cost-Effectiveness Results - PY2021
(Expected Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0718	\$13,574,588	\$11,293,456	-\$2,281,133	0.83
Total Resource Cost Test (TRC) No Adder	\$0.0718	\$13,574,588	\$10,266,778	-\$3,307,810	0.76
Utility Cost Test (UCT)	\$0.0450	\$8,512,149	\$10,266,778	\$1,754,629	1.21
Rate Impact Test (RIM)		\$30,754,202	\$10,266,778	-\$20,487,424	0.33
Participant Cost Test (PCT)		\$13,798,028	\$32,311,886	\$18,513,858	2.34
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000019404

**Table 7 – MF Program Level Cost-Effectiveness Results - PY2022
(Expected Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0718	\$13,566,588	\$11,931,788	-\$1,634,800	0.88
Total Resource Cost Test (TRC) No Adder	\$0.0718	\$13,566,588	\$10,847,080	-\$2,719,508	0.80
Utility Cost Test (UCT)	\$0.0450	\$8,504,149	\$10,847,080	\$2,342,932	1.28
Rate Impact Test (RIM)		\$31,253,321	\$10,847,080	-\$20,406,241	0.35
Participant Cost Test (PCT)		\$13,798,028	\$32,877,616	\$19,079,588	2.38
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000018115

Table 8 and 9 provide cost-effectiveness results for the measure categories by program type for each program year.

Table 8 – MF Measure Category Level Cost-Effectiveness Results - PY2021

Program	Measure Category	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Participant PV Benefits (\$)	Participant PV Cost (\$)	PCT Test
Multifamily - LI	Appliances	\$63,311	\$599,281	0.11	\$57,555	\$599,281	0.10	\$57,555	\$90,660	0.63	\$57,555	\$231,713	0.25	\$266,052	\$785,000	0.34
Multifamily - LI	Building Shell	\$340,910	\$2,002,855	0.17	\$309,918	\$2,002,855	0.15	\$309,918	\$180,265	1.72	\$309,918	\$761,824	0.41	\$765,793	\$2,065,200	0.37
Multifamily - LI	HVAC	\$1,435,836	\$2,526,549	0.57	\$1,305,305	\$2,526,549	0.52	\$1,305,305	\$1,126,264	1.16	\$1,305,305	\$3,796,841	0.34	\$3,781,518	\$2,499,950	1.51
Multifamily - LI	Lighting	\$848,458	\$260,073	3.26	\$771,325	\$260,073	2.97	\$771,325	\$675,848	1.14	\$771,325	\$2,356,547	0.33	\$2,871,094	\$248,790	11.54
Multifamily - LI	New Homes	\$2,651,341	\$940,378	2.82	\$2,410,310	\$940,378	2.56	\$2,410,310	\$2,027,302	1.19	\$2,410,310	\$7,374,336	0.33	\$7,427,881	\$750,000	9.90
Multifamily - LI	Water Heating	\$306,872	\$458,159	0.67	\$278,974	\$458,159	0.61	\$278,974	\$405,707	0.69	\$278,974	\$1,105,812	0.25	\$1,293,578	\$550,074	2.35
Multifamily - MR	Appliances	\$63,311	\$599,281	0.11	\$57,555	\$599,281	0.10	\$57,555	\$80,601	0.71	\$57,555	\$221,654	0.26	\$255,993	\$785,000	0.33
Multifamily - MR	Building Shell	\$340,910	\$2,002,855	0.17	\$309,918	\$2,002,855	0.15	\$309,918	\$160,265	1.93	\$309,918	\$741,823	0.42	\$745,792	\$2,065,200	0.36
Multifamily - MR	HVAC	\$1,435,836	\$2,526,549	0.57	\$1,305,305	\$2,526,549	0.52	\$1,305,305	\$1,001,305	1.30	\$1,305,305	\$3,671,882	0.36	\$3,656,559	\$2,499,950	1.46
Multifamily - MR	Lighting	\$848,458	\$260,073	3.26	\$771,325	\$260,073	2.97	\$771,325	\$600,863	1.28	\$771,325	\$2,281,562	0.34	\$2,796,109	\$248,790	11.24
Multifamily - MR	New Homes	\$2,651,341	\$940,378	2.82	\$2,410,310	\$940,378	2.56	\$2,410,310	\$1,802,374	1.34	\$2,410,310	\$7,149,408	0.34	\$7,202,953	\$750,000	9.60
Multifamily - MR	Water Heating	\$306,872	\$458,159	0.67	\$278,974	\$458,159	0.61	\$278,974	\$360,694	0.77	\$278,974	\$1,060,800	0.26	\$1,248,565	\$550,074	2.27

Table 9 – MF Measure Category Level Cost-Effectiveness Results - PY2022

Program	Measure Category	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Participant PV Benefits (\$)	Participant PV Cost (\$)	PCT Test
Multifamily - LI	Appliances	\$67,576	\$599,200	0.11	\$61,432	\$599,200	0.10	\$61,432	\$90,579	0.68	\$61,432	\$234,849	0.26	\$270,283	\$785,000	0.34
Multifamily - LI	Building Shell	\$354,188	\$2,002,695	0.18	\$321,989	\$2,002,695	0.16	\$321,989	\$180,105	1.79	\$321,989	\$774,923	0.42	\$779,605	\$2,065,200	0.38
Multifamily - LI	HVAC	\$1,502,885	\$2,525,549	0.60	\$1,366,259	\$2,525,549	0.54	\$1,366,259	\$1,125,264	1.21	\$1,366,259	\$3,856,730	0.35	\$3,844,944	\$2,499,950	1.54
Multifamily - LI	Lighting	\$895,232	\$259,473	3.45	\$813,847	\$259,473	3.14	\$813,847	\$675,248	1.21	\$813,847	\$2,394,267	0.34	\$2,922,878	\$248,790	11.75
Multifamily - LI	New Homes	\$2,819,228	\$938,578	3.00	\$2,562,934	\$938,578	2.73	\$2,562,934	\$2,025,503	1.27	\$2,562,934	\$7,494,449	0.34	\$7,556,210	\$750,000	10.07
Multifamily - LI	Water Heating	\$326,786	\$457,799	0.71	\$297,078	\$457,799	0.65	\$297,078	\$405,347	0.73	\$297,078	\$1,121,415	0.26	\$1,314,861	\$550,074	2.39
Multifamily - MR	Appliances	\$67,576	\$599,200	0.11	\$61,432	\$599,200	0.10	\$61,432	\$80,521	0.76	\$61,432	\$224,790	0.27	\$260,224	\$785,000	0.33
Multifamily - MR	Building Shell	\$354,188	\$2,002,695	0.18	\$321,989	\$2,002,695	0.16	\$321,989	\$160,105	2.01	\$321,989	\$754,923	0.43	\$759,604	\$2,065,200	0.37
Multifamily - MR	HVAC	\$1,502,885	\$2,525,549	0.60	\$1,366,259	\$2,525,549	0.54	\$1,366,259	\$1,000,306	1.37	\$1,366,259	\$3,731,772	0.37	\$3,719,985	\$2,499,950	1.49
Multifamily - MR	Lighting	\$895,232	\$259,473	3.45	\$813,847	\$259,473	3.14	\$813,847	\$600,263	1.36	\$813,847	\$2,319,282	0.35	\$2,847,893	\$248,790	11.45
Multifamily - MR	New Homes	\$2,819,228	\$938,578	3.00	\$2,562,934	\$938,578	2.73	\$2,562,934	\$1,800,575	1.42	\$2,562,934	\$7,269,521	0.35	\$7,331,282	\$750,000	9.78
Multifamily - MR	Water Heating	\$326,786	\$457,799	0.71	\$297,078	\$457,799	0.65	\$297,078	\$360,334	0.82	\$297,078	\$1,076,402	0.28	\$1,269,848	\$550,074	2.31

Exhibit C



Memorandum

To: Jillian Fredrickson, PacifiCorp
From: David Basak, Guidehouse
Date: April 16, 2021
Re: Cost Effectiveness for the Utah Multifamily Program - High (+10%) Participation

Guidehouse has developed this memo in response to PacifiCorp's proposed Multifamily Program cost-effectiveness modeling needs in the state of Utah. Each scenario is analyzed using modeled assumptions provided by PacifiCorp. These scenarios utilize the following assumptions:

- **Scenarios:** Ran cost-effectiveness for program years 2021 and 2022.
- **Avoided Costs:** Guidehouse performed a custom analysis of calculating avoided costs by using the *2019 IRP Decrement* and applied against Utah specific residential end-use specific load shapes.
- **Energy Rates:** Utilized the rates provided by PacifiCorp for PY2021 and applied an escalation of 2.28% to arrive at estimated energy rates for PY2022.
- **Line Loss Factors:** Residential line loss factor utilized throughout the analysis.

This memo will begin by addressing the inputs used in the analysis of the Utah HES Program. The cost-effectiveness inputs are as follows:

Table 1 - Utility Inputs

Parameter	PY2021	PY2022
Discount Rate	6.92%	6.92%
Residential Line Loss	6.36%	6.36%
Residential Energy Rate (\$/kWh) ¹	\$0.1092	\$0.1117
Inflation Rate	2.28%	2.28%

¹ Future rates determined using a 2.28% annual escalator.

Table 2 –Program Costs by Scenario and Program Year (High Participation)

Program Year	Utility Admin	Program Delivery	Program Development	Incentives	Total Utility Costs	Gross Customer Costs
2021	\$8,000	\$1,000,000	\$5,000	\$8,249,064	\$9,262,064	\$15,177,831
2022	\$5,000	\$1,000,000	\$0	\$8,249,064	\$9,254,064	\$15,177,831
2021-2022	\$13,000	\$2,000,000	\$5,000	\$16,498,127	\$18,516,127	\$30,355,662

Table 3 – Program Savings by Scenario and Program Year (High Participation)

Program Year	Gross kWh Savings	Realization Rate	Adjusted Gross kWh Savings	Net to Gross Ratio	Net kWh Savings	Measure Life
2021	21,997,503	100%	21,997,503	90%	19,788,370	15
2022	21,997,503	100%	21,997,503	90%	19,788,370	15
2021-2022	43,995,005	100%	43,995,005	90%	39,576,740	15

Table 4 - Benefit/Cost Ratios by Measure Category (High Participation)

Program Year	PTRC	TRC	UCT	RIM	PCT
2021	0.84	0.76	1.22	0.33	2.34
2022	0.89	0.80	1.29	0.35	2.38
2021-2022	0.86	0.78	1.25	0.34	2.36

Table 5 through Table 7 provide cost-effectiveness results for the combination of PY2021 and PY2022 followed by the individual program year results.

**Table 5 – MF Program Level Cost-Effectiveness Results - PY2021 and PY2022
(High Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0713	\$29,653,494	\$25,547,768	-\$4,105,726	0.86
Total Resource Cost Test (TRC) No Adder	\$0.0713	\$29,653,494	\$23,225,244	-\$6,428,250	0.78
Utility Cost Test (UCT)	\$0.0445	\$18,516,127	\$23,225,244	\$4,709,117	1.25
Rate Impact Test (RIM)		\$68,006,475	\$23,225,244	-\$44,781,231	0.34
Participant Cost Test (PCT)		\$30,355,662	\$71,708,452	\$41,352,790	2.36
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000020520

**Table 6 – MF Program Level Cost-Effectiveness Results - PY2021
(High Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0713	\$14,830,747	\$12,422,801	-\$2,407,946	0.84
Total Resource Cost Test (TRC) No Adder	\$0.0713	\$14,830,747	\$11,293,456	-\$3,537,291	0.76
Utility Cost Test (UCT)	\$0.0445	\$9,262,064	\$11,293,456	\$2,031,392	1.22
Rate Impact Test (RIM)		\$33,728,322	\$11,293,456	-\$22,434,867	0.33
Participant Cost Test (PCT)		\$15,177,831	\$35,543,074	\$20,365,243	2.34
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000021249

**Table 7 – MF Program Level Cost-Effectiveness Results - PY2022
(High Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0713	\$14,822,747	\$13,124,967	-\$1,697,780	0.89
Total Resource Cost Test (TRC) No Adder	\$0.0713	\$14,822,747	\$11,931,788	-\$2,890,959	0.80
Utility Cost Test (UCT)	\$0.0445	\$9,254,064	\$11,931,788	\$2,677,725	1.29
Rate Impact Test (RIM)		\$34,278,153	\$11,931,788	-\$22,346,365	0.35
Participant Cost Test (PCT)		\$15,177,831	\$36,165,378	\$20,987,547	2.38
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000019838

Table 8 and 9 provide cost-effectiveness results for the measure categories by program type for each program year.

Table 8 – MF Measure Category Level Cost-Effectiveness Results - PY2021

Program	Measure Category	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Participant PV Benefits (\$)	Participant PV Cost (\$)	PCT Test
Multifamily - LI	Appliances	\$69,642	\$658,190	0.11	\$63,311	\$658,190	0.10	\$63,311	\$98,707	0.64	\$63,311	\$253,865	0.25	\$292,657	\$863,500	0.34
Multifamily - LI	Building Shell	\$375,001	\$2,201,114	0.17	\$340,910	\$2,201,114	0.15	\$340,910	\$196,266	1.74	\$340,910	\$835,980	0.41	\$842,372	\$2,271,720	0.37
Multifamily - LI	HVAC	\$1,579,419	\$2,766,544	0.57	\$1,435,836	\$2,766,544	0.52	\$1,435,836	\$1,226,230	1.17	\$1,435,836	\$4,163,865	0.34	\$4,159,669	\$2,749,945	1.51
Multifamily - LI	Lighting	\$933,304	\$278,483	3.35	\$848,458	\$278,483	3.05	\$848,458	\$735,836	1.15	\$848,458	\$2,584,604	0.33	\$3,158,204	\$273,669	11.54
Multifamily - LI	New Homes	\$2,916,476	\$1,011,628	2.88	\$2,651,341	\$1,011,628	2.62	\$2,651,341	\$2,207,245	1.20	\$2,651,341	\$8,088,982	0.33	\$8,170,669	\$825,000	9.90
Multifamily - LI	Water Heating	\$337,559	\$499,414	0.68	\$306,872	\$499,414	0.61	\$306,872	\$441,717	0.69	\$306,872	\$1,211,833	0.25	\$1,422,935	\$605,081	2.35
Multifamily - MR	Appliances	\$69,642	\$658,190	0.11	\$63,311	\$658,190	0.10	\$63,311	\$87,642	0.72	\$63,311	\$242,801	0.26	\$281,592	\$863,500	0.33
Multifamily - MR	Building Shell	\$375,001	\$2,201,114	0.17	\$340,910	\$2,201,114	0.15	\$340,910	\$174,265	1.96	\$340,910	\$813,979	0.42	\$820,371	\$2,271,720	0.36
Multifamily - MR	HVAC	\$1,579,419	\$2,766,544	0.57	\$1,435,836	\$2,766,544	0.52	\$1,435,836	\$1,088,776	1.32	\$1,435,836	\$4,026,411	0.36	\$4,022,215	\$2,749,945	1.46
Multifamily - MR	Lighting	\$933,304	\$278,483	3.35	\$848,458	\$278,483	3.05	\$848,458	\$653,352	1.30	\$848,458	\$2,502,121	0.34	\$3,075,720	\$273,669	11.24
Multifamily - MR	New Homes	\$2,916,476	\$1,011,628	2.88	\$2,651,341	\$1,011,628	2.62	\$2,651,341	\$1,959,824	1.35	\$2,651,341	\$7,841,561	0.34	\$7,923,248	\$825,000	9.60
Multifamily - MR	Water Heating	\$337,559	\$499,414	0.68	\$306,872	\$499,414	0.61	\$306,872	\$392,203	0.78	\$306,872	\$1,162,319	0.26	\$1,373,421	\$605,081	2.27

Table 9 – MF Measure Category Level Cost-Effectiveness Results - PY2022

Program	Measure Category	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Participant PV Benefits (\$)	Participant PV Cost (\$)	PCT Test
Multifamily - LI	Appliances	\$74,333	\$658,109	0.11	\$67,576	\$658,109	0.10	\$67,576	\$98,626	0.69	\$67,576	\$257,322	0.26	\$297,311	\$863,500	0.34
Multifamily - LI	Building Shell	\$389,607	\$2,200,954	0.18	\$354,188	\$2,200,954	0.16	\$354,188	\$196,106	1.81	\$354,188	\$850,405	0.42	\$857,565	\$2,271,720	0.38
Multifamily - LI	HVAC	\$1,653,173	\$2,765,545	0.60	\$1,502,885	\$2,765,545	0.54	\$1,502,885	\$1,225,231	1.23	\$1,502,885	\$4,229,843	0.36	\$4,229,438	\$2,749,945	1.54
Multifamily - LI	Lighting	\$984,755	\$277,883	3.54	\$895,232	\$277,883	3.22	\$895,232	\$735,236	1.22	\$895,232	\$2,626,156	0.34	\$3,215,166	\$273,669	11.75
Multifamily - LI	New Homes	\$3,101,151	\$1,009,828	3.07	\$2,819,228	\$1,009,828	2.79	\$2,819,228	\$2,205,445	1.28	\$2,819,228	\$8,221,286	0.34	\$8,311,831	\$825,000	10.07
Multifamily - LI	Water Heating	\$359,464	\$499,054	0.72	\$326,786	\$499,054	0.65	\$326,786	\$441,357	0.74	\$326,786	\$1,229,032	0.27	\$1,446,347	\$605,081	2.39
Multifamily - MR	Appliances	\$74,333	\$658,109	0.11	\$67,576	\$658,109	0.10	\$67,576	\$87,562	0.77	\$67,576	\$246,258	0.27	\$286,247	\$863,500	0.33
Multifamily - MR	Building Shell	\$389,607	\$2,200,954	0.18	\$354,188	\$2,200,954	0.16	\$354,188	\$174,105	2.03	\$354,188	\$828,405	0.43	\$835,565	\$2,271,720	0.37
Multifamily - MR	HVAC	\$1,653,173	\$2,765,545	0.60	\$1,502,885	\$2,765,545	0.54	\$1,502,885	\$1,087,776	1.38	\$1,502,885	\$4,092,389	0.37	\$4,091,984	\$2,749,945	1.49
Multifamily - MR	Lighting	\$984,755	\$277,883	3.54	\$895,232	\$277,883	3.22	\$895,232	\$652,752	1.37	\$895,232	\$2,543,673	0.35	\$3,132,682	\$273,669	11.45
Multifamily - MR	New Homes	\$3,101,151	\$1,009,828	3.07	\$2,819,228	\$1,009,828	2.79	\$2,819,228	\$1,958,024	1.44	\$2,819,228	\$7,973,865	0.35	\$8,064,410	\$825,000	9.78
Multifamily - MR	Water Heating	\$359,464	\$499,054	0.72	\$326,786	\$499,054	0.65	\$326,786	\$391,843	0.83	\$326,786	\$1,179,518	0.28	\$1,396,833	\$605,081	2.31

Exhibit D



Memorandum

To: Jillian Fredrickson, PacifiCorp
From: David Basak, Guidehouse
Date: April 16, 2021
Re: Cost Effectiveness for the Utah Multifamily Program - Low (-10%) Participation

Guidehouse has developed this memo in response to PacifiCorp's proposed Multifamily Program cost-effectiveness modeling needs in the state of Utah. Each scenario is analyzed using modeled assumptions provided by PacifiCorp. These scenarios utilize the following assumptions:

- **Scenarios:** Ran cost-effectiveness for program years 2021 and 2022.
- **Avoided Costs:** Guidehouse performed a custom analysis of calculating avoided costs by using the *2019 IRP Decrement* and applied against Utah specific residential end-use specific load shapes.
- **Energy Rates:** Utilized the rates provided by PacifiCorp for PY2021 and applied an escalation of 2.28% to arrive at estimated energy rates for PY2022.
- **Line Loss Factors:** Residential line loss factor utilized throughout the analysis.

This memo will begin by addressing the inputs used in the analysis of the Utah HES Program. The cost-effectiveness inputs are as follows:

Table 1 - Utility Inputs

Parameter	PY2021	PY2022
Discount Rate	6.92%	6.92%
Residential Line Loss	6.36%	6.36%
Residential Energy Rate (\$/kWh) ¹	\$0.1092	\$0.1117
Inflation Rate	2.28%	2.28%

¹ Future rates determined using a 2.28% annual escalator.

Table 2 – Program Costs by Scenario and Program Year (Low Participation)

Program Year	Utility Admin	Program Delivery	Program Development	Incentives	Total Utility Costs	Gross Customer Costs
2021	\$8,000	\$1,000,000	\$5,000	\$6,749,234	\$7,762,234	\$12,418,225
2022	\$5,000	\$1,000,000	\$0	\$6,749,234	\$7,754,234	\$12,418,225
2021-2022	\$13,000	\$2,000,000	\$5,000	\$13,498,468	\$15,516,468	\$24,836,450

Table 3 – Program Savings by Scenario and Program Year (Low Participation)

Program Year	Gross kWh Savings	Realization Rate	Adjusted Gross kWh Savings	Net to Gross Ratio	Net kWh Savings	Measure Life
2021	17,997,957	100%	17,997,957	90%	16,190,484	15
2022	17,997,957	100%	17,997,957	90%	16,190,484	15
2021-2022	35,995,914	100%	35,995,914	90%	32,380,969	15

Table 4 - Benefit/Cost Ratios by Measure Category (Low Participation)

Program Year	PTRC	TRC	UCT	RIM	PCT
2021	0.83	0.75	1.19	0.33	2.34
2022	0.87	0.79	1.26	0.35	2.38
2021-2022	0.85	0.77	1.22	0.34	2.36

Table 5 through Table 7 provide cost-effectiveness results for the combination of PY2021 and PY2022 followed by the individual program year results.

**Table 5 – MF Program Level Cost-Effectiveness Results - PY2021 and PY2022
(Low Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0724	\$24,628,859	\$20,902,720	-\$3,726,139	0.85
Total Resource Cost Test (TRC) No Adder	\$0.0724	\$24,628,859	\$19,002,472	-\$5,626,386	0.77
Utility Cost Test (UCT)	\$0.0456	\$15,516,468	\$19,002,472	\$3,486,005	1.22
Rate Impact Test (RIM)		\$56,008,571	\$19,002,472	-\$37,006,098	0.34
Participant Cost Test (PCT)		\$24,836,450	\$58,670,552	\$33,834,101	2.36
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000016958

**Table 6 – MF Program Level Cost-Effectiveness Results - PY2021
(Low Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0724	\$12,318,429	\$10,164,110	-\$2,154,319	0.83
Total Resource Cost Test (TRC) No Adder	\$0.0724	\$12,318,429	\$9,240,100	-\$3,078,329	0.75
Utility Cost Test (UCT)	\$0.0456	\$7,762,234	\$9,240,100	\$1,477,866	1.19
Rate Impact Test (RIM)		\$27,780,082	\$9,240,100	-\$18,539,982	0.33
Participant Cost Test (PCT)		\$12,418,225	\$29,080,697	\$16,662,472	2.34
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000017560

**Table 7 – MF Program Level Cost-Effectiveness Results - PY2022
(Low Participation)**

Cost-Effectiveness Test	Levelized \$/kWh	Costs	Benefits	Net Benefits	Benefit/Cost Ratio
Total Resource Cost Test (PTRC) + Conservation Adder	\$0.0723	\$12,310,429	\$10,738,610	-\$1,571,820	0.87
Total Resource Cost Test (TRC) No Adder	\$0.0723	\$12,310,429	\$9,762,372	-\$2,548,057	0.79
Utility Cost Test (UCT)	\$0.0456	\$7,754,234	\$9,762,372	\$2,008,138	1.26
Rate Impact Test (RIM)		\$28,228,489	\$9,762,372	-\$18,466,116	0.35
Participant Cost Test (PCT)		\$12,418,225	\$29,589,855	\$17,171,629	2.38
Lifecycle Revenue Impacts (\$/kWh)					\$0.0000016393

Table 8 and 9 provide cost-effectiveness results for the measure categories by program type for each program year.

Table 8 – MF Measure Category Level Cost-Effectiveness Results - PY2021

Program	Measure Category	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Participant PV Benefits (\$)	Participant PV Cost (\$)	PCT Test
Multifamily - LI	Appliances	\$56,980	\$540,372	0.11	\$51,800	\$540,372	0.10	\$51,800	\$82,613	0.63	\$51,800	\$209,561	0.25	\$239,446	\$706,500	0.34
Multifamily - LI	Building Shell	\$306,819	\$1,804,595	0.17	\$278,927	\$1,804,595	0.15	\$278,927	\$164,265	1.70	\$278,927	\$687,668	0.41	\$689,213	\$1,858,680	0.37
Multifamily - LI	HVAC	\$1,292,252	\$2,286,554	0.57	\$1,174,775	\$2,286,554	0.51	\$1,174,775	\$1,026,297	1.14	\$1,174,775	\$3,429,816	0.34	\$3,403,366	\$2,249,955	1.51
Multifamily - LI	Lighting	\$763,612	\$241,662	3.16	\$694,193	\$241,662	2.87	\$694,193	\$615,860	1.13	\$694,193	\$2,128,489	0.33	\$2,583,985	\$223,911	11.54
Multifamily - LI	New Homes	\$2,386,207	\$869,128	2.75	\$2,169,279	\$869,128	2.50	\$2,169,279	\$1,847,360	1.17	\$2,169,279	\$6,659,690	0.33	\$6,685,093	\$675,000	9.90
Multifamily - LI	Water Heating	\$276,185	\$416,903	0.66	\$251,077	\$416,903	0.60	\$251,077	\$369,697	0.68	\$251,077	\$999,792	0.25	\$1,164,220	\$495,067	2.35
Multifamily - MR	Appliances	\$56,980	\$540,372	0.11	\$51,800	\$540,372	0.10	\$51,800	\$73,560	0.70	\$51,800	\$200,508	0.26	\$230,394	\$706,500	0.33
Multifamily - MR	Building Shell	\$306,819	\$1,804,595	0.17	\$278,927	\$1,804,595	0.15	\$278,927	\$146,265	1.91	\$278,927	\$669,667	0.42	\$671,213	\$1,858,680	0.36
Multifamily - MR	HVAC	\$1,292,252	\$2,286,554	0.57	\$1,174,775	\$2,286,554	0.51	\$1,174,775	\$913,835	1.29	\$1,174,775	\$3,317,354	0.35	\$3,290,903	\$2,249,955	1.46
Multifamily - MR	Lighting	\$763,612	\$241,662	3.16	\$694,193	\$241,662	2.87	\$694,193	\$548,373	1.27	\$694,193	\$2,061,002	0.34	\$2,516,498	\$223,911	11.24
Multifamily - MR	New Homes	\$2,386,207	\$869,128	2.75	\$2,169,279	\$869,128	2.50	\$2,169,279	\$1,644,925	1.32	\$2,169,279	\$6,457,255	0.34	\$6,482,658	\$675,000	9.60
Multifamily - MR	Water Heating	\$276,185	\$416,903	0.66	\$251,077	\$416,903	0.60	\$251,077	\$329,185	0.76	\$251,077	\$959,280	0.26	\$1,123,708	\$495,067	2.27

Table 9 – MF Measure Category Level Cost-Effectiveness Results - PY2022

Program	Measure Category	P-TRC Benefits (\$)	P-TRC Costs (\$)	P-TRC Test	TRC Benefits (\$)	TRC Costs (\$)	TRC Test	Utility PV Benefits (\$)	Utility PV Costs (\$)	Utility Cost Test	Ratepayer PV Benefits (\$)	Ratepayer PV Costs (\$)	RIM Test	Participant PV Benefits (\$)	Participant PV Cost (\$)	PCT Test
Multifamily - LI	Appliances	\$60,818	\$540,291	0.11	\$55,289	\$540,291	0.10	\$55,289	\$82,532	0.67	\$55,289	\$212,375	0.26	\$243,255	\$706,500	0.34
Multifamily - LI	Building Shell	\$318,769	\$1,804,435	0.18	\$289,790	\$1,804,435	0.16	\$289,790	\$164,105	1.77	\$289,790	\$699,441	0.41	\$701,644	\$1,858,680	0.38
Multifamily - LI	HVAC	\$1,352,596	\$2,285,554	0.59	\$1,229,633	\$2,285,554	0.54	\$1,229,633	\$1,025,297	1.20	\$1,229,633	\$3,483,617	0.35	\$3,460,449	\$2,249,955	1.54
Multifamily - LI	Lighting	\$805,709	\$241,063	3.34	\$732,463	\$241,063	3.04	\$732,463	\$615,260	1.19	\$732,463	\$2,162,377	0.34	\$2,630,590	\$223,911	11.75
Multifamily - LI	New Homes	\$2,537,305	\$867,328	2.93	\$2,306,641	\$867,328	2.66	\$2,306,641	\$1,845,560	1.25	\$2,306,641	\$6,767,612	0.34	\$6,800,589	\$675,000	10.07
Multifamily - LI	Water Heating	\$294,107	\$416,543	0.71	\$267,370	\$416,543	0.64	\$267,370	\$369,336	0.72	\$267,370	\$1,013,798	0.26	\$1,183,375	\$495,067	2.39
Multifamily - MR	Appliances	\$60,818	\$540,291	0.11	\$55,289	\$540,291	0.10	\$55,289	\$73,480	0.75	\$55,289	\$203,322	0.27	\$234,202	\$706,500	0.33
Multifamily - MR	Building Shell	\$318,769	\$1,804,435	0.18	\$289,790	\$1,804,435	0.16	\$289,790	\$146,105	1.98	\$289,790	\$681,441	0.43	\$683,644	\$1,858,680	0.37
Multifamily - MR	HVAC	\$1,352,596	\$2,285,554	0.59	\$1,229,633	\$2,285,554	0.54	\$1,229,633	\$912,835	1.35	\$1,229,633	\$3,371,154	0.36	\$3,347,987	\$2,249,955	1.49
Multifamily - MR	Lighting	\$805,709	\$241,063	3.34	\$732,463	\$241,063	3.04	\$732,463	\$547,773	1.34	\$732,463	\$2,094,890	0.35	\$2,563,104	\$223,911	11.45
Multifamily - MR	New Homes	\$2,537,305	\$867,328	2.93	\$2,306,641	\$867,328	2.66	\$2,306,641	\$1,643,125	1.40	\$2,306,641	\$6,565,177	0.35	\$6,598,154	\$675,000	9.78
Multifamily - MR	Water Heating	\$294,107	\$416,543	0.71	\$267,370	\$416,543	0.64	\$267,370	\$328,825	0.81	\$267,370	\$973,286	0.27	\$1,142,863	\$495,067	2.31

CERTIFICATE OF SERVICE

Docket No. 21-035-T06
Advice No. 21-04

I hereby certify that on May 4, 2021, a true and correct copy of the foregoing was served by electronic mail to the following:

Utah Office of Consumer Services

Michele Beck mbeck@utah.gov
ocs@utah.gov

Division of Public Utilities

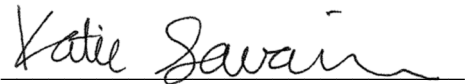
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