

Information Request AG 1-5

Please refer to Exh. BGC-1, at 5–6. Provide the Company’s projections of the following factors for the remainder of the 2022-2024 Three-Year Plan Term and explain the bases thereof:

- a. Number of gas-to-electric heat pump installations, broken down by full v. partial displacement and term year;
- b. Anticipated benefit-cost ratio of gas-to-electric heat pump installations, broken down by full v. partial displacement and term year;
- c. All necessary values and variables used to calculate the benefit-cost ratio referred to in AG 1-5(b);
- d. Number of weatherization jobs expected, broken down by term year and by whether they are associated with a full displacement gas-to-electric heat pump installation, a partial displacement gas-to-electric heat pump installation, or not associated with any gas-to-electric heat pump installation;
- e. Anticipated benefit-cost ratio of weatherization jobs, broken down by term year and by the categories described in AG 1-5(d); and
- f. All necessary values and variables used to calculate the benefit-cost ratio(s) referred to in AG 1-5(e).

Response

- a. Please refer to Table AG 1-5(a), below, for the number of heat pumps expected to be installed in the 2022-2024 Three-Year Plan Term. All quantities are expressed in tons.

Table AG 1-5(a)

	2022 (Actual)	2023 (MTM)	2024 (MTM)
Measure	Tons	Tons	Tons
Central Ducted Heat Pump Partially Displacing Existing Furnace, Gas	37	47	49
Central Ducted Heat Pump Fully Displacing Existing Furnace, Gas	0	32	35
MSHP with Integrated Controls Partially Displacing Existing Boiler, Gas	94	109	112
MSHP with Integrated Controls Fully Displacing Existing Boiler, Gas	34	198	212

- b. Please refer to Table AG 1-5(b), below, for benefit-cost ratios (“BCR”) by measure type and year.

Table AG 1-5(b)

	2022 (Actual)	2023 (MTM)	2024 (MTM)
Measure	BCR	BCR	BCR
Central Ducted Heat Pump Partially Displacing Existing Furnace, Gas	0.30	0.37	0.57
Central Ducted Heat Pump Fully Displacing Existing Furnace, Gas	0.12	0.23	0.45
MSHP with Integrated Controls Partially Displacing Existing Boiler, Gas	0.23	0.30	0.67
MSHP with Integrated Controls Fully Displacing Existing Boiler, Gas	0.12	0.22	0.52

- c. The BCRs for the heat pumps noted in Table AG 1-5(b) are the same across all Program Administrators. Many of the inputs used to calculate the BCR for heat pumps in the Residential Retail Core Initiative are determined on a per ton basis and are also based on evaluation studies. The increase in BCRs from 2022 to 2024 is due to application of certain non-energy impacts (“NEIs”) that were developed in a recent NEI study. Preliminary NEI values were applied in 2023 with final report results to be applied in 2024. Table AG 1-5(c), below, provides the key inputs used to calculate the BCR for the heat pumps listed in Table AG 1-5(a), above. For a list of all measure inputs and a detailed calculation of Benefit Cost Ratios for each heat pump measure, please refer to tab “Meas” and “Calcs” of the Benefit Cost Model submitted by the Program Administrators in the annual report docket, D.P.U. 23-60, specifically for Berkshire as an Excel file titled, “2022ReportingBCModelGas_ Berkshire_AR_Final_unlink.”

Table AG 1-5(c)

	Total Resource Cost (TRC)	ML	MMBT U Savings	kWh Savings	NEIs (2022/2023 /2024)
Central Ducted Heat Pump Partially Displacing Existing Furnace, Gas	\$3,439	17	13.4	(1,233)	0/\$14.87/\$56.18

Central Ducted Heat Pump Fully Displacing Existing Furnace, Gas	\$3,439	17	17.9	(2,132)	0/\$21.50/ \$67.24
MSHP with Integrated Controls Partially Displacing Existing Boiler, Gas	\$4,098	18	16.1	(1,505)	0/\$17.66/ \$104.35
MSHP with Integrated Controls Fully Displacing Existing Boiler, Gas	\$4,098	18	17.8	(1,982)	0/\$23.06/ \$94.14

d. Please refer to Table AG 1-5(d), below, for projected Weatherization Jobs by year. The Company does not separately track or associate insulation and air sealing jobs with heat pump installations. Heat Pumps and weatherization jobs are completed in two separate core initiatives and not tracked together as a singular project. Customers installing heat pumps may pursue various weatherization paths, including completing weatherization through earlier participation in Residential Coordinated Delivery in previous years or terms, concurrently with installing a heat pump, or after installing a heat pump. Due to the temporal variability associated with program participation and the fact that heat pumps and weatherization are installed in separate initiatives, weatherization jobs are not readily associated with heat pump jobs. While PAs do verify whether a heat pump installation is associated with weatherization, PAs do not verify if each weatherization job is associated with a heat pump. As an example, a weatherization job completed today and invoiced to the PA could be for a customer expected to install heat pumps the following year. There is no way for the PA to know when capturing the measure in tracking systems today if the customer is planning a future heat pump installation.

Table AG 1-5(d)

	2023 (MTM)	2024 (MTM)
Measure	Qty	Qty
Air Sealing, Gas (Single Family)	247	260
Insulation, Gas (Single Family)	261	260
Moderate Income Qualified - Air Sealing, Gas (Single Family)	0	0
Moderate Income Qualified - Insulation, Gas (Single Family)	0	0
Air Sealing, Gas (Attached Low Rise)	25	4
Insulation, Gas (Attached Low Rise)	25	4
Moderate Income Qualified - Air Sealing, Gas (Attached Low Rise)	0	2
Moderate Income Qualified - Insulation, Gas (Attached Low Rise)	0	2

For purposes of responding to this information request, the Company undertook a retrospective exercise to determine how many completed weatherization jobs from 2022 were associated with heat pump installations in 2022. In so doing, the Company determined that:

- 6 weatherization jobs were associated with full displacement heat pumps; and
- 3 weatherization jobs were associated with partial displacement heat pumps.

e. Please refer to Table AG 1-5(e), below, for BCRs by measure type and year.

Table AG 1-5(e)

	2023 (MTM)	2024 (MTM)
Measure	BCR	BCR
Air Sealing, Gas (Single Family)	1.51	1.34
Insulation, Gas (Single Family)	2.53	2.41
Moderate Income Qualified - Air Sealing, Gas (Single Family)	-	-
Moderate Income Qualified - Insulation, Gas (Single Family)	-	-
Air Sealing, Gas (Attached Low Rise)	0.52	0.39
Insulation, Gas (Attached Low Rise)	0.82	0.61
Moderate Income Qualified - Air Sealing, Gas (Attached Low Rise)	-	1.91
Moderate Income Qualified - Insulation, Gas (Attached Low Rise)	-	3.70

f. There are many inputs used to calculate the BCRs for weatherization, and several of these inputs vary by Program Administrator. Each weatherization job in Residential Coordinated Delivery is unique, and the savings are modeled by the Lead Vendor for each participating home are based on the pre-existing and post-work conditions of the home. Thus, key inputs such as energy savings and Total Resource Costs vary per project, and at the measure level by PA. Key inputs required to calculate the BCR for weatherization measures include Total Resource Costs, total energy savings, measure life, realization rates, and NEIs. For a list of all measure inputs and a detailed calculation of BCRs for weatherization measures (BCR IDs GA2a001, GA2a002, GA2a132, GA2a133, GA2a046, GA2a047, GA2a059, GA2a060), please refer to tab “Meas” and “Calcs” of the Benefit Cost Model submitted by the Program Administrators in the annual report docket, D.P.U. 23-60, specifically for as an Excel file titled, “2022ReportingBCMModelGas_ Berkshire_AR_Final_unlink.”