60-Day Notice Comments of the City and County of Denver

In accordance with the DSM Biennial Plan Stipulation and Settlement Agreement in Proceeding No. 08A-366EG and subsequent demand-side management proceeding, Public Service Company of Colorado agreed to provide 60-Day Notice to the DSM Roundtable of any proposal to add a new DSM program, reduce rebate levels, adopt new or discontinue existing measures, or change technical assumptions or eligibility requirements.

DSM Roundtable participants have 30 days from the time of notice date to provide comments to Public Service on the proposed changes. Public Service will have 30 days thereafter to consider comments. The deadlines for each notice are included in the 60-Day Notice List. Any party that wishes to submit comments may do so by emailing them to the contacts listed below. The Company will update the 60-Day Notice List with the outcome of each notice at the end of the 60-Day process.[1]

Residential Battery Demand Response Update - 2020

Notification Date August 7, 2020
Comments Due September 7, 2020

The City and County of Denver ("Denver" or "the City"), appreciates the opportunity to provide comments for Public Service Company of Colorado's ("PSCo" or the "Company") consideration in response to its Program 60-Day Notice for the Residential Battery Demand Response Update – 2020.

The City appreciates the Company's acknowledgment of the Commission's statement from paragraph 77 of Decision No. C0-0289 and agrees that there is strong state policy support to spur a greater adoption of batteries as soon as possible and for the foreseeable future.[2] The City also appreciates the Company's efforts to make the Residential Battery Demand Response

[1] "Current 60/90 - Day Notices" xcelenergy.com/company/rates_and_regulations/filings/colorado_demand-side_management

[2] Decision No. C20-0289, at ¶ 77. "We emphatically agree with intervenors that there is strong state policy support to move forward with storage projects and that the imminent step-down of the federal investment tax credit for solar is reason to move swiftly."

Update ("2020 DR Pilot") more enticing to customers. However, Denver has some questions and as to why the Company is choosing to change the incentive structure as proposed, and whether such a change will indeed achieve the program objectives. Additionally, the City provides a recommendation for the 2020 DR Pilot.

I. Question 1: Is the DR Pilot intended to replace the proposal from the 2021/2022 DSM Plan (proceeding 20A-0287EG)?

The 60-Day notice does not provide a clear timeline for the 2020 DR Pilot. The "Residential Battery Demand Response Electric Forecast Summary" provides program forecast outputs for 2019 and 2020 only, as well as a total program budget of $312,500. The City asks its remaining questions and provides the following statements based on the assumption that the 2020 DR Pilot is indeed intended for 2020 and that the 2021/2022 Residential Battery Demand Response Pilot is distinct.

II. Question 2: What customer surveys, research or other evidence is available that an upfront incentive of $1,250 per customer will achieve participation from 500 residential customers?

Considering the following statements and information provided the Company:

- "The pilot will target participation from up to 500 residential customers."[3]
- "The Company believes that increasing the incentive it pays to participating customers and moving all incentives upfront will make the pilot more enticing and have a positive effect on the battery market in Colorado."[4]
- 2020 program participation forecast shows only 200 non-export participants and 50 export participants (250 is half of 500).[5]

[3] Section B, Page 3 of the Residential Battery Demand Response Product Write-Up.

[4] Page 1 of the "Summary of 60-Day Notice".

[5] "Program Forecast Outputs." Residential Battery Demand Response Electric Forecast Summary.

- Total revised program budget of $312,500 (equals sufficient budget for only 250 participants assuming a $1,250 incentive per customer).[6]

The City presumes that adequate customer participation in the pilot is necessary to determine if the utility-accessible customer-sited batteries can achieve the grid value that the Company proposes to evaluate. It is therefore imperative that a sufficient incentive is provided to achieve the requisite participation levels. Unfortunately, the Company's program budget indicates that the Company expects that the proposed incentive level will attract only half of the pilot's participation target.

III. Question 3: What are the assumptions and methods used to determine that the participant bill reduction benefits and incremental cost payback period w/rebate calculated?

Considering the following statements and information provided the Company:

- Incremental Cost Payback Period w/Rebate (yrs)[7]
  - (2.83) for Non-export participant
  - (3.20) for Export participant
- Bill Reduction – Electric ($17,125)[8]
  - This number is shown as a negative that detracts from the Participant Test benefits. Assuming 250 participants as budgeted, this suggests that electric bills will increase by $68.50 per customer.

It seems extremely unlikely that a customer would experience a positive return on investment for their battery system. The illustrative economics presented by the Company in the solar+storage program stakeholder discussions in proceeding 19A-0369E demonstrated that the amount of time required to attain a positive return on investment for a customer participating in

[6] "Table 1: Summary of Forecasted Impacts: Residential Battery Demand Response Pilot" Page 2. Summary of 60-Day Notice.

[7] "Stipulated Outputs." Residential Battery Demand Response Electric Forecast Summary.

[8] "Other Benefits: Bill Reduction – Electric." Residential Battery Demand Response Electric CBA.

the pilot would exceed the projected useful life of a batter system.[9] The City hopes that the Company can clarify if the incremental cost payback period refers to the amount of time for the Company to generate sufficient value to obtain a positive return on its initial incentive payment, or if it refers to the value to the Customer in deploying and recuperating the costs of a battery.

The City is surprised to see that a residential battery deployment is expected to increase a customer's electric bill. This seems contrary to the Company's statement in the 2020 DR Pilot description that,

> "A battery can provide back-up power to a customer's critical energy uses during a grid outage, while also helping to manage energy costs when paired with time-of-use or demand rates."

The City hopes that the Company would encourage participating customers to participate in the most economically desirable rate class and to take advantage of other opportunities to monetize and benefit from their battery system.

IV. Question 4: What analysis has the Company conducted to evaluate use of a performance-based incentive for the 2020 DR Pilot?

The City is surprised to see that the Company is not considering a performance-based incentive ("PBI") for the 2020 DR Pilot. The City believes that paying for performance could be valuable to the Company, and to the participating customer if the value of the customer asset's performance is appropriately priced. The City recognizes that at small scales and with residential programs PBI options can be confusing and inadvertently discourage a customer from participating. However, the City tends to agree with the sentiment shared by the Company in proceeding 19A-0369E,

[9] "Attachment 4" from Filing G_76777. Proceeding 19A-0369E.

> "Without a PBI, there is less incentive to maintain the system and optimize ongoing performance, which can ultimately harm non-participants."[10]

The City would prefer to see the Company propose a PBI that is likely to provide a positive return on investment for a customer over the useful life of a battery (assuming that such a program with a PBI incentive were successful and extended beyond 2020). The City suggests the program be modeled after the Mass Save ConnectedSolutions program for Small Scale Batteries.[11]

The ConnectedSolutions program considers a similar number and duration of discharge events to the 2020 DR Pilot and allows batteries to make a 100% continuous contribution during events. A summary of the program is given in the table below.

	Summer	Winter
Performance Incentive	$225 per kW-summer	$50 per kW-winter
Discharge Events per Season	30 to 60	5 - 15
Months Discharge Events Can Occur	June through September	December through March
Time Discharge Events Can Occur	2 p.m. to 7 p.m.	2 p.m. to 7 p.m.
5-year incentive lock	Yes	Yes
• Participating in both Summer and Winter may count towards the SMART 52 full cycle equivalent Dispatch Requirement • Customers can apply for a 0% HEAT Loan for the cost of the battery system • Customers with battery inverter capacity of 50kW or less are eligible for the incentives in this table		

A key difference is that the ConnectedSolutions pays for performance.

> "In return for your participation, your Mass Save sponsor will pay $225 per kilowatt (kW) for your battery's average contribution during summer events and $50 per kW for your battery's average contribution during winter events.
>
> Different batteries can contribute different amounts over the 2 or 3-hour events. For a typical battery capable of a 5-kW continuous contribution during these events, the ConnectedSolutions program would pay $1,375 per year of participation."

[10] Direct Testimony of Kerry R. Klemm. Page 33, lines 10-11. Proceeding 19A-0369E.

[11] masssave.com/saving/residential-rebates/connectedsolutions-batteries

The Massachusetts energy efficiency program administrators ("PAs", in this case Eversource Electric and National Grid Electric are the PAs) use a Total Resource Cost ("TRC") test to determine the cost-effectiveness of an offering or program. For the purposes of determining the cost-effectiveness of storage included as part of energy efficiency and demand response, the PAs would apply the TRC standard. The PAs look at the total cost of the project, regardless of funding source, and compare that against the total benefits of the project and determine if the benefits exceed the costs. The PAs proposed a pay for performance program design for customer-owned and sited behind-the-meter storage assets, typically referred to as daily dispatch, which means a resource type that can participate daily during the summer peak hours without adverse impacts to personal comfort or facility productivity. For pay for performance specifically, the PAs are not incenting the equipment itself, only the performance of the equipment assuming it is already in a customer's home or facility. Therefore, when assessing the cost effectiveness of the pay for performance storage offerings, the PAs look only at the amount of the incentive they are proposing to offer and compare that against the level of benefits the kW reduction is expected to produce.

An update from the PAs on the Active Demand Reduction – Daily Dispatch program to the Massachusetts Energy Efficiency Advisory Council discusses the grid and customer value obtained through the first three years of the pilot and recommend full approval by the Department of Public Utilities for the program.[12] As part of the recommendation for full program approval the PAs provided data tables regarding the cost-effectiveness and benefit-cost ratio of

[12] "Active Demand Reduction – Daily Dispatch Update." Massachusetts Energy Efficiency Advisory Council. January 22, 2020. ma-eeac.org/wordpress/wp-content/uploads/January-Demand-Presentation_EEAC_Final_1-16-20.pdf

their programs in a 2019-2021 Three-Year Energy Efficiency Plan filling.[13] Eversource Electric and National Grid Electric, the two PAs for the Residential Active Demand Reduction program, reported the following benefit-cost ratios:

Benefit-Cost Ratio (Residential Active Demand Reduction)	Eversource Electric	National Grid Electric
2019	0.98	1.16
2020	1.52	1.98
2021	1.75	2.11

Data from PA Data Tables, Exhibit 4, Cost-effectiveness (sheet), within relevant MS Excel workbooks for Eversource and National Grid. ma-eeac.org/plans-updates/

The PAs note how the total impact of reductions grew as more customers enrolled in the program in the January 2020 program update. [14] This is also reflected in the increasing benefit-cost ratio year over year shown in the table above.

The incentive amount and structure of the ConnectedSolutions program appears to create a positive return on investment for customers in addition to providing a positive benefit-cost ratio for the utility's that administer the programs.[15] An appropriately priced incentive is likely necessary to achieve the participation targets set by the Company for the 2020 DR Pilot. The Company should also consider the value of an incentive structure that can be extended to encourage ongoing program participation to maximize the long-term learnings and grid value for the Company.

[13] Exhibit 4 – PA Data Tables. Eversource Electric and National Grid Electric. ma-eeac.org/plans-updates/

[14] "Active Demand Reduction – Daily Dispatch Update." Massachusetts Energy Efficiency Advisory Council. January 22, 2020. ma-eeac.org/wordpress/wp-content/uploads/January-Demand-Presentation_EEAC_Final_1-16-20.pdf

[15] Assumes a $10,000 cost for a typical 5 kW battery and a 10 year warranty.

V. Conclusion

The City agrees with Commission's emphasis that the Company,

> "engage with interested stakeholders, including Staff, COSSA/SEIA, and CEO, and to propose a significant program for retail solar + storage and behind the meter storage."[16]

As such, the incentive for this emerging market program with direct support and clear direction from the Commission should be such that the Company has no issue or doubt that it will reach the desired participation target of 500 residential customers. The incentive should be sufficient to ensure, at a minimum, a neutral economic outcome for a participating customer with the means to purchase a battery as is necessary for program participation.

Undoubtedly work remains to be done to learn from storage deployments and to expand solar + storage offerings in broader future filings. The City agrees with the Company regarding the value of such programs for all customers,

> "While the price of battery storage technology is declining, this work will be challenging considering the market pricing of such devices, particularly in light of other customer and participant/non-participant equities. In other words, any proposal must yield value to all customers."[17]

The City also agrees with the Company that the deployment of storage will create new opportunities for the Company to add value to the system,

> "Accordingly, the energy storage system assets can be leveraged by the Company to provide grid services on an ongoing basis the majority of the time. These grid services include: (1) reducing system peak and localized feeder peak demand; (2) integrating renewables through distributed storage; and (3) reducing overall system costs by using the storage assets to arbitrage power prices. These overall electric grid services help keep electric rates low for our customers." [18]

---

[16] See Decision No. C20-0289, at ¶ 77.

[17] "Status Update Regarding Solar Plus Storage Programming." Pg 8. Filing G_767777. 19A-0369E.

[18] Attachment D. Direct Testimony of Charles A. Gouin, page 12. Proceeding 19A-0225E.

The learnings desired by the Company regarding the system benefits that utility-accessible customer-sited batteries can bring are contingent upon the deployment and adoption of such systems by customers in the first place. The City encourages the Company to respond to our comments in a timely manner and update the structure of the 2020 DR Pilot with the following change:

> **Rebate Amount and Structure: Change the per customer rebate from an upfront amount of $1,250 to a PBI modeled after the mass save ConnectedSolutions program for Small Scale Batteries.** [19]

For the reasons stated above, Denver respectfully requests that the Company adopt its comments in this DSM Program Update. We look forward to working with the Company to support the implementation of a significant Residential Battery Demand Response program.

Respectfully submitted the 27th of August 2020.

Jonathan Rogers

Renewable Energy Specialist for the City and County of Denver

By: */s/ Jonathan Rogers*
Jonathan Rogers
101 West Colfax Ave., Suite 800
Denver, CO 80202
Telephone: 203-912-4664
Email: Jonathan.Rogers@denvergov.org

[19] $225 per kW for the battery's average contribution during summer events and $50 per kW for the battery's average contribution during winter events. masssave.com/saving/residential-rebates/connectedsolutions-batteries