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March 26, 2024

Mr. Drew Bohan  
Executive Director  
Energy Data and Analytics Office  
California Energy Commission  
1516 Ninth Street  
Sacramento, California 95814

RE: Pioneer Community Energy's Load Management Standards Compliance Plan

Dear Mr. Bohan,

Pioneer Community Energy (Pioneer) is submitting the attached Load Management Standards Compliance Plan (Plan) in accordance with §1623.1(a)(3)(A) of the Load Management Standards. This Plan was approved and authorized for submission by Pioneer's Board of Directors (Board) in a duly noticed public meeting held on March 21<sup>st</sup>, 2024. Following this cover letter are the following documents:

- Pioneer's Plan
- Staff Report where the Plan was approved by the Board
- MIDAS Upload Verification

Pioneer would like to emphasize its strong commitment to the goals articulated in §1623.1(a)(1) of the Load Management Standards. Realization of these goals is necessary for the long-term stability of the California electric grid. Provided in this Plan is a roadmap of programs that help Pioneer do its part in achieving the LMS goals. Included also in this submission is the Pioneer Staff Report provided to the Pioneer Board for the Plan and verification of Pioneer's MIDAS uploads.

If you have any questions, or additional information is required, please contact me at [ciananm@pioneercommunityenergy.org](mailto:ciananm@pioneercommunityenergy.org) or call me at (916) 758-8955.

Sincerely,  
Cianan Mauk  
Power Supply Contracts Manager  
[Ciananm@pioneercommunityenergy.org](mailto:Ciananm@pioneercommunityenergy.org)

# **Load Management Standards Compliance Plan**

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# 1. Introduction

Pursuant to California Energy Commission’s (CEC) amended Load Management Standards (LMS), this document (Plan) demonstrates how Pioneer Community Energy (Pioneer) intends to meet the articulated goals of the regulation. Pioneer does not accept CEC’s belief that they hold jurisdiction over Community Choice Aggregators (CCAs), and it is participating in this decision voluntarily.

## I. About CEC & LMS

The CEC was established and granted specific load planning and management powers by the Warren-Alquist Act of 1974 (known as Load Management Standards). In 2022, LMS was amended, and new regulations were implemented with the broader goals of encouraging the use of electrical energy at off-peak hours, encouraging the control of daily and seasonal peak loads to improve electric system efficiency and reliability, lessening or delaying the need for new electrical capacity, and reducing fossil fuel consumption and greenhouse gas emissions<sup>1</sup>.

The following is Pioneer’s roadmap for compliance in the form of a table listing the new requirements, their deadlines, and their respective statuses:

| Relevant Section | Requirement  | Deadline                             | Status                   |
|------------------|--|--------------------------------------|--------------------------|
| §1623.1(c)       | Upload time-dependent rates in the Market Informed Demand Automation Server (MIDAS)  | July 1, 2023                         | Complete                 |
| §1623.1(a)(1)    | Evaluate and implement a marginal cost-based rate or, in the alternative, a plan of programs designed to achieve the same goals                            | April 1, 2024                        | Addressed with this plan |
| §1623.1(a)(3)(A) | Submit the plan to CEC within 30 days of Board adoption. Respond to any requests for additional information or requests for plan revisions within 90 days. | 30 days after Pioneer Board approval | In Progress              |
| §1623(c)(4)      | Within 1 year of the LMS effective date,   | April 1, 2024                        | In Progress              |

<sup>1</sup> California Code of Regulations (“CCR”) §1623.1(a)(1).

|                  |  |  |             |
|------------------|--|--|-------------|
|                  | provide customers access to their Rate Identification Numbers (RIN) on billing statements and in online accounts using both and QR code.   |  |             |
| §1623(c)(2)(A)   | Develop and submit to the CEC, in conjunction with the other obligated utilities, a single statewide standard tool for authorized rate data access by third parties along with the terms and conditions for use of the tool. Upon CEC approval, the tool will be live and obligated LSEs must maintain and improve the tool. | October 1, 2024                        | In Progress |
| §1623.1(b)(3)    | Submit to CEC a list of load flexibility programs deemed cost-effective with at least one option for automating response to MIDAS signals for each customer class.   | October 1, 2024                        | In Progress |
| §1623.1(a)(3)(C) | Submit annual reports to CEC demonstrating implementation of the Plan, as approved by the Board.   | April 1, 2025, and annually thereafter | In Progress |
| §1623.1(b)(2)    | Submit at least one marginal cost-based rate or program to the Pioneer Board for approval for any customer class where such a rate will materially reduce peak load.   | July 1, 2025                           | In Progress |
| §1623.1(b)(5)    | Conduct a public information campaign to inform and educate customers on why marginal cost-based rates or load flexibility   | No deadline provided                   | In Progress |

|                  |  |             |         |
|------------------|--|-------------|---------|
|                  | programs are needed, how they are used, and how these rates and programs can save customers money.   |             |         |
| §1623.1(a)(1)(C) | Review the Plan at least once every 3 years after the Plan is adopted by the Pioneer board. Submit any updates of the Plan to the Board if there is a material change. | Triennially | Ongoing |

## II. About Pioneer

Pioneer is a CCA that serves unincorporated Placer and El Dorado County along with the Town of Loomis and the cities of Auburn, Colfax, Grass Valley, Lincoln, Nevada City, Placerville, and Rocklin<sup>2</sup>. Pioneer is governed by a Board of Directors made up of elected officials from its member agencies<sup>3</sup>. It currently serves approximately 166,000 accounts consuming approximately 2,000 gigawatt hours annually. Pioneer has a relatively small staff compared to other CCAs<sup>4</sup>. Currently, the staff is made up of fourteen individuals. Many necessary business functions are handled by outside contractors.

As mentioned previously, per the amended LMS regulations Pioneer must provide a plan that describes how Pioneer will meet the goals of encouraging the use of electrical energy at off-peak hours, encouraging the control of daily and seasonal peak loads to improve electric system efficiency and reliability, lessening or delaying the need for new electrical capacity, and reducing fossil fuel consumption and greenhouse gas emissions<sup>5</sup>. Specifically, the plan must evaluate marginal cost-based rates for each customer class in terms of cost effectiveness, equity, technological feasibility, benefits to the grid, and benefits to customers<sup>6</sup>. After weighing these factors, Pioneer may decide that marginal cost-based rates are not necessary and may instead propose programs that enable automated response to marginal cost signal(s) for each customer class and evaluate them based on the previously mentioned factors<sup>7</sup>.

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<sup>2</sup> Amendment No. 5 to the Amended and Restated Joint Exercise of Powers Agreement for Pioneer Community Energy, Res. No. 2022-26 (2022).

<sup>3</sup> *Id.*

<sup>4</sup> Pioneer Community Energy, <https://pioneercommunityenergy.org/>, (last visited March 7, 2024).

<sup>5</sup> CCR §1623.1(a)(1).

<sup>6</sup> CCR §1623.1(a)(1)(A).

<sup>7</sup> CCR §1623.1(a)(1)(B).

### III. Format of Analysis

The LMS Regulation requires an analysis of marginal time-based rates and any subsequent programs for each customer class<sup>8</sup>. In consideration of CEC guidance, Pioneer has divided Customer Class into two distinct classes – residential and industrial/commercial. Pursuant to the LMS regulations, marginal time-based rates and the subsequent programs will be analyzed under the following factors:

- Cost Effectiveness,
- Technological Feasibility,
- Benefits to the Grid,
- Benefits to Customers, and
- Equity.

Cost Effectiveness will be broken down individually into Cost and Effectiveness. Where analysis and discussion for each customer class is substantially the same, the sections will be combined.

## 2. Rates

CCA governing boards have jurisdiction over rate setting for their customers<sup>9</sup>. This provides CCAs with flexibility in how they want to procure energy and correspondingly set rates for the communities that they serve. With that concept in mind, Pioneer has a strong emphasis on keeping ratepayers' costs low.

Implementing new rates involve considerable costs to Pioneer. The Pioneer Board of Directors (Pioneer Board) is required to review rates annually<sup>10</sup>. However, staff can bring suggested rate changes first to the Finance Committee and then to the Board of Directors. In assessing rates, Pioneer has many considerations. These include traditional business costs such as operating expenses, paying for power supply and regulatory products, and maintaining creditworthiness. However, unlike traditional utilities, CCAs must also consider the ability of a ratepayer to opt out of service. Because of this, Pioneer (like many other CCAs) relies on a strategy of mirroring Large Investor-Owned Utility (IOU) rates with a targeted discount.

The LMS regulations requires the Pioneer Board to assess for approval at least one marginal cost-based rate by June 30, 2027<sup>11</sup>. Pioneer may apply for approval of a marginal cost-based rate

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<sup>8</sup> CCR §1623.1(a)(1)(A).

<sup>9</sup> Public Utilities Code Section 366.2(c)(3).

<sup>10</sup> *Financial Policies*, (Oct. 21, 2021), <https://pioneercommunityenergy.org/wp-content/uploads/2022/04/2021-10-21-Financial-Policies.pdf>.

<sup>11</sup> CCR §1623.1(b)(2).

offered by PG&E<sup>12</sup>. PG&E stated their intent to provide one marginal cost-based rate by January 2027 which Pioneer can mirror upon its implementation<sup>13</sup>. With that in mind, per the requirements of the regulations, Pioneer must assess developing a marginal cost-based rate outside of mirroring one developed by PG&E.

## I. Marginal Cost-Based Rates

Marginal cost is calculated as “the sum of the marginal energy cost, the marginal capacity cost (generation, transmission, and distribution), and any other appropriate time- and location-dependent marginal costs, including the locational marginal cost of associated greenhouse gas emissions, on a time interval of no more than one hour<sup>14</sup>. Energy cost computations shall reflect locational marginal cost pricing as determined by the associated balancing authority, such as the California Independent System Operator, the Balancing Authority of Northern California, or other balancing authority<sup>15</sup>. Marginal capacity cost computations shall reflect the variations in the probability and value of system reliability of each component (generation, transmission, and distribution).<sup>16</sup>” There is an immediate issue with the provided definition of marginal cost-based rates – Pioneer does not control the transmission and distribution in its service territory so it cannot accurately compute a marginal cost-based rate. Additionally, it is hard to quantify greenhouse gas emission costs. It appears that the regulations intend for these rates to be dynamic, responding to demand on the grid. For ease of reference, this Plan will refer to marginal cost-based rates as Dynamic Pricing.

### A. Cost Effectiveness

As mentioned previously, Pioneer relies heavily on outside contractors. Any implementation of dynamic pricing would require amending contracts with multiple contractors. This means that overall cost will be unquantifiable, as the contract amendments will need to be negotiated. To weigh cost against effectiveness, Pioneer believes it is best to assess the effectiveness of Dynamic Pricing first in order to ascertain any unforeseen costs.

#### i. Effectiveness

Pioneer will analyze “Effectiveness” on whether the implemented rate will consistently lead to the desired load shifting outcome.

In November of 2023, Lawrence Berkeley Laboratory (Lawrence Berkeley Lab) released a report titled "The use of price-based demand response as a resource in electricity system

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<sup>12</sup> *Id.*

<sup>13</sup> 2023 COMPLIANCE PLAN for the LOAD MANAGERMENTS STANDARDS, Docket 23-LMS-01 (TN #252489).

<sup>14</sup> CCR §1623.1(b)(1).

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

planning.<sup>17</sup> This paper analyzed twelve utilities use of time-based rates. They included Time of Use Pricing, Real Time Pricing, Variable Peak Pricing, Critical Peak Pricing, and Critical Peak Rebate in their analysis of price-based demand response.

Approximately one-third of the utilities studied did not include price-based demand response in the Integrated Resource Plan (IRP) as they found that there was not sufficient participation to deem it significant in impacting demand<sup>18</sup>. Furthermore, of the customers that did participate, their response to price signals was often erratic and hard to predict<sup>19</sup>.

In studying participation rate, one utility studied showed a five-fold increase in customer participation from an opt-out model compared to an opt-in model<sup>20</sup>. This shows that these pricing schemes are generally unpopular for ratepayers. Consumer advocates have raised serious concerns about opt-out pricing as they can be especially burdensome for low-income ratepayers (See *Equity*). For CCAs, an opt-out approach presents serious business risks as the ratepayer may choose to opt out of the CCA completely if they are upset with the dynamic rate. A large amount of unexpected opt-outs of CCA service have credit implications which in turn leads to higher procurement costs. This in turn leads to higher rates in order to maintain the financial stability of the CCA.

For the opt-in model, participation ranged from three percent to thirty percent<sup>21</sup>. Similarly, a 2016 Department of Energy sponsored study of several utilities found a fifteen percent opt-in rate for dynamic pricing rates<sup>22</sup>. This is consistent with several other studies mentioned in the Lawrence Berkeley Lab report, with no dynamic pricing rate exceeding thirty percent enrollment for opt-in participation<sup>23</sup>.

In the Lawrence Berkeley Lab study, only one utility reported load reduction for opt-in participation<sup>24</sup>. Residential ratepayers of that utility showed load reduction levels eighty to ninety percent lower than other residential customers<sup>25</sup>. However, for commercial and industrial ratepayers, the utility found only a ten percent higher load reduction compared to other commercial and industrial ratepayers<sup>26</sup>.

As mentioned previously, studies show inconsistent results in using dynamic pricing to achieve consistent demand response. One study showed that automated demand response programs are

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<sup>17</sup> Juan Pablo Carvallo and Lisa Schwartz, *The use of price-based demand response as a resource in electricity system planning*, Energy Markets & Policy, Nov. 2023.

<sup>18</sup> *Id.* at 5

<sup>19</sup> *Id.*

<sup>20</sup> *Id.* at 7.

<sup>21</sup> *Id.*

<sup>22</sup> Dept. of Energy, *Customer Acceptance, Retention, and Response to Time-Based Rates from the Consumer Behavior Studies*, Electricity Delivery & Energy Reliability, Nov. 2016.

<sup>23</sup> Carvallo, *supra* note 17.

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

<sup>26</sup> *Id.*

overridden on average 14 percent of the time<sup>27</sup>. This study also found that the longer a demand response event lasts, the more likely automation will be overridden with events lasting from the two to four-hour range being overridden up to 30 percent of the time<sup>28</sup>.

#### **a. Discussion - Residential**

To offset any risk to Pioneer’s business model, any dynamic pricing rate would need to be opt-in. As mentioned above, an opt-out model could lead to a large number of unexpected opt-outs of CCA service. This would have credit implications which in turn would increase procurement costs for the CCA. These costs would then be passed on to the remaining ratepayers in future rate changes, which is a fundamentally inequitable result.

As the studies show, an opt-in model would lead to at best thirty percent participation. However, for this percentage to strongly show load reduction based on price signals, the participating ratepayers would need smart thermostats<sup>29</sup>. For ratepayers that do not have this technology, a method of providing notice (such as automated texts) would need to be developed.

In sum, current evidence does not show that Dynamic Pricing results in consistently shifting energy usage. Furthermore, it shows that that Dynamic Pricing is not popular with ratepayers, which means its aggregate effects may not be substantial. These conclusions mean that Cost should be comparably light for Pioneer to find the exercise a worthwhile endeavor.

#### **b. Discussion – Commercial/Industrial**

Much of the same logic for residential holds true that any Dynamic Pricing that any program would need to be opt-in rather than opt-out. Depending on the size of the customer, serious automation investments would need to be made. Furthermore, the only datapoint available to determine if there would be actual load reductions and shifts to off-peak hours demonstrates only a ten percent reduction compared to opted out customers. This may be because many commercial/industrial accounts cannot, for business reasons, shift their energy consumption (e.g. Target could not shut off its HVAC from 4 p.m. to 9 p.m. without discouraging shoppers from spending time in their store). In sum, there is not enough evidence to show that Dynamic Pricing for commercial/industrial customers would be effective in shifting energy consumption to off-peak hours.

#### **ii. Costs**

Pioneer will assess “Costs” based on the actual financial cost to Pioneer.

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<sup>27</sup> Pamela Jordan Wildstein, *Quantifying the Impact of Override Behavior on the Performance of a Summer Direct Load Control Program*, Uni. Of Michigan, April 2022.

<sup>28</sup> *Id.*

<sup>29</sup> Carvallo, *supra* note 17, at 9.

In creating a new rate class, per regulatory requirements, Pioneer would need to develop the class from the ground up rather than mirroring PG&E classes. This would require first a rate study to determine the amount of ratepayers likely to enroll in the class and the cost the rate needs to be to recoup all expenses related to the rate. The latter factor becomes considerably harder to determine when the rate is dynamic rather than fixed which in turn makes the study more complicated and more expensive. This study would also have to assess the impact the new dynamic rate would have on enrollment in existing classes.

Pioneer is contracted with Calpine to handle billing matters. To institute a new rate class, Pioneer would then need to amend that contract. Outside of the negotiation period, Calpine estimates that instating a dynamic pricing rate would take approximately six months or more. Concurrent with this implementation would be a marketing and outreach campaign to educate ratepayers on the rate and their ability to opt-in to the rate. This would require amending Pioneer's contract with JSR Strategies, Pioneer's marketing consulting vendor.

### **A. Discussion – Residential & Commercial/Industrial**

As mentioned above, process costs for this initiative are unquantifiable as it would require amending several contracts with outside contractors. However, in assessing staff time to renegotiate the contracts and to participate in the initiative itself, the cost would be especially burdensome. Time taken to initiate the dynamic pricing rate and related customer education campaign takes from other pressing matters that Pioneer's staff must handle. As mentioned above, Pioneer has a lean staff model, so staff generally have limited bandwidth outside of their normal job duties. Taking significant time away from core job functions could have unintended cascading effects which could impact Pioneer's business model. In sum, the process costs are especially high for Pioneer to implement a Dynamic Pricing rate at this time.

## **B. Technological Feasibility**

Pioneer will assess "Technological Feasibility" based on whether the requisite technology is commercial and not experimental.

Pioneer is contracted with Calpine to handle billing matters. As a CCA, Pioneer does not have real time access to customer meters. Instead, meter data is handled by PG&E which is then transmitted to Calpine to generate customer invoices. In order to determine if it is technically feasible to implement hourly and sub-hourly rates, Pioneer would need to know if customer meters are capable of handling hourly and sub-hourly intervals in their service area (Advanced Metering Infrastructure). This information is not readily available and requires instituting a query through Calpine which Pioneer would have to pay for.

The ability to react to price signals depends entirely on notice. It is fundamentally unfair to expect a ratepayer to react to price signals if they are unaware of them. That is why there must be sufficient technology to 1) provide notice to customers and 2) enable automation devices to react to said price signals.

## **i. Discussion - Residential**

Pioneer would not be able to accurately determine total technological feasibility without incurring additional cost. Furthermore, to ensure that the initiative is a success, Pioneer would need to contract with a third party for the ability to text opt-in customers when they need to shift their load and would need to help ratepayers obtain a smart thermostat. Pioneer would also need to work with PG&E, and Calpine to create a way to access meter data in real time. In sum, Dynamic Pricing may be technologically feasible for residential customers, but Pioneer cannot make an accurate determination without incurring additional costs.

## **ii. Discussion – Commercial/Industrial**

Similarly, Pioneer cannot determine whether all Commercial/Industrial meters are capable of reading hourly and sub-hourly without incurring additional cost. Furthermore, Pioneer is not in a position to speculate on what technology upgrades for a Commercial/Industrial customer to be able to react and shift their energy consumption based on price signals. Also, as stated above, Pioneer would need to work with PG&E and Calpine to develop a way to access meter data in real time. In sum, Dynamic Pricing may be technically feasible for Commercial/Industrial customers, but Pioneer cannot make an accurate determination without incurring additional costs.

## **C. Benefits to the Grid**

Pioneer will assess “Benefits to the Grid” on whether the proposed rate will reduce periods of high demand which constrain the grid.

An opt-in dynamic pricing rate may provide many benefits to the grid. CAISO energy prices are subject to supply and demand economic principles. Periods of high pricing are due to substantially greater demand than supply. A dynamic pricing rate would incentivize ratepayers to reduce their demand and there are supply constraints. Similarly, transmission costs are subject to supply and demand economic principles. To reduce demand for energy generation would also reduce demand for energy transmission. Finally, a dynamic pricing rate could reduce greenhouse gas emissions as times of high demand are when fossil fuels are generally used the most.

## **i. Discussion - Residential**

There are many theoretical benefits to the grid. If these benefits are realized, it would be in line with Pioneer’s commitment to keep costs low for their ratepayers. However, these benefits are purely speculative as there is no reliable data showing Dynamic Pricing has resulted in consistent reductions in peak demand.

## **ii. Discussion – Commercial/Industrial**

The same logic also applies to Commercial/Industrial customers. The only reliable data point we have demonstrated a ten percent reduction during peak times. This is not enough data to draw a determination that Dynamic Pricing will provide consistent benefits to the grid.

## **D. Benefits to Customers**

Pioneer will assess “Benefits to Customers” on whether the proposed rate will result in lower costs to Pioneer customers.

Dynamic Pricing provides an incentive for customers to shift their energy consumption to times when it cheaper. As mentioned above, this similarly impacts transmission prices. However, there are currently no available studies showing consistent energy savings when customers are on a Dynamic Pricing rate. Of the studies Pioneer reviewed, all were designed to show potential savings – not demonstrate actual savings.

## **i. Discussion – Residential & Commercial/Industrial**

Any benefits to customers of either class are purely speculative. Pioneer has been unable to find any studies that show consistent energy consumption shifting due to Dynamic Pricing. Furthermore, Pioneer has not found any studies demonstrating consistent savings to a ratepayer by utilizing a Dynamic Pricing rate.

## **E. Equity**

Pioneer will assess “Equity” on whether the proposed rate will disproportionately burden certain populations.

Customers may see benefits on their bills. The ability to shift energy consumption to periods of lower costs would mean lower bills. However, as mentioned above, for the program to truly be successful it would require the ability of the ratepayer to receive notice and for them to have access to smart thermostat technology which can react to price signals.

## **i. Discussion – Residential & Commercial/Industrial**

The equitable benefits of a dynamic price rate are contingent on many factors. The evidence that these factors aligning will result in the desired behavior is so far not substantive.

As noted above, utility consumer advocates have noted that Dynamic Pricing is disproportionately burdensome on the poor. The poor are more likely to have less efficient appliances and would have to pay for text messages sent to them to receive notice of the price fluctuations. During heat wave events when air conditioning must be used for health reasons, the poor would be forced to choose between high rates or their own health. If a low-income customer mistakenly leaves an

appliance on, the resulting bill could be catastrophic, having direct impacts on their budgetary considerations for food, health, and shelter<sup>30</sup>. In sum, the equitable benefits are hypothetical while the burden on the poor is concrete.

## **F. Conclusion - Rates**

The LMS goals, articulated in §1623.1(a)(1) of the amended regulations, are to encourage the use of electricity at off-peak hours, encouraging the control of daily and seasonal peak loads to improve electric system efficiency and reliability, lessening, or delaying the need for new electrical capacity, and reducing fossil fuel consumption and greenhouse gas emissions. In weighing all the factors (Cost Effectiveness, Technological Feasibility, Benefits to the Grid, Benefits to Customers, and Equity), implementing a marginal cost-based rate would not be cost effective at achieving these goals. Studies show that at most thirty percent of residential ratepayers would utilize the program with the actual outcome in reducing demand being highly contingent on access to certain technologies. This outcome is also based solely on the reporting of one IOU. Furthermore, Pioneer has not seen any studies showing that Dynamic Pricing works in consistently shifting consumption. In contrast, Pioneer would need to invest significant money and staff time to ensure that the program is a success. Furthermore, Pioneer cannot ascertain the technological feasibility of instituting the rate without incurring additional cost. As noted above, a key issue with technological feasibility is that Pioneer does not have real time access to the meters in its service area. There may be benefits to the grid, but studies show that these benefits are not consistent. For customers, Dynamic Pricing could be beneficial, but it could equally be punitive and lead to inequitable results for lower income customers. For these reasons, Pioneer will not institute a marginal cost-based rate at this time. In the alternative, Pioneer will proceed with instituting the following load flexibility programs.

## **3. Load Flexibility Programs**

As mentioned previously, Pioneer has a lean staff model. The Pioneer Programs Manager position was not filled until July 2023. Pioneer staff have developed the following roadmap for program implementation of programs that enable automated response to marginal cost signals. These programs are analyzed under the same framework as Dynamic Pricing (Cost Effectiveness, Cost, Technological Feasibility, Benefits to the Grid, Benefits to Customers, and Equity). Effectiveness and Cost will be truncated. They will be broken down into the following categories and analyzed together:

- Programs that help customers obtain hardware that helps shift energy usage.
- Programs that incentivize energy usage behaviors.

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<sup>30</sup> Stephanie Kelly, Peter Szekely, Jennifer Hiller, *Texas freeze raises concerns about 'ridiculous' variable rate bills*, Reuters, Fe. 22, 2021.

- Existing government programs not administered by Pioneer staff.

## I. Hardware Programs

The following are programs that help customers obtain hardware that help customers shift their energy usage. The table has the name of the program, a brief description of the program, Pioneer staff’s progress on the program, and the expected date of implementation:

| Program Provider     | Program Description   | Progress                       | Date of Implementation |
|----------------------|---|--------------------------------|------------------------|
| Participate Energy   | Pioneer customers contract with Participate Energy for leased home solar and storage products. These customers are aggregated into a virtual power plant. It shifts energy usage by charging the battery when times are cheapest (compared to self-generation) and then uses power from the battery at high-cost hours. | Pioneer Board approved program | Second Quarter of 2024 |
| Thule Energy Storage | Pioneer customers install Thule’s proprietary technology in line with the air conditioning system at low upfront cost to the customer. This technology freezes water into ice during periods of low demand and then thaws the ice as part of the air conditioning system during periods of high demand.                 | Under Development              | Second Quarter of 2025 |

### A. Cost Effectiveness

Pioneer will assess “Effectiveness” whether the program will consistently lead to the desired load shifting outcome. “Cost” will also be assessed based on the actual cost to Pioneer.

These are all programs that have demonstrated effectiveness in consistently shifting energy habits without incurring significant costs from Pioneer. Participate Energy’s program to help customers install a battery on their home allows for customers to pull from their own reserve of power during high-cost times. Similarly, Thule Energy Storage would use periods of cheap grid energy to freeze ice, which in turn is used in conjunction with air conditioning to lessen the amount of energy needed by the air conditioning unit during periods of high energy cost. Pioneer believes that while none of these programs is a silver bullet in consistently reducing demand, when aggregated together they can provide consistent demand reduction. Furthermore, since these programs are done in partnership with a third party, Pioneer would not need to invest significant time and resources to get the programs running.

### B. Technological Feasibility

Pioneer will assess “Technological Feasibility” based on whether the requisite technology is commercial and not experimental.

All listed programs in the section rely on proven technology. Participate Energy is partnered with Tesla to use Tesla’s battery and photovoltaic technology. Thule Energy Storage’s technology have logged more than 60 million operating hours at over 300 locations since 2005<sup>31</sup>. Thule Energy Storage has previously partnered with Southern California Edison Company for a successfully implemented load shifting program relying on their technology.

## **C. Benefits to the Grid**

Pioneer will assess “Benefits to the Grid” on whether the proposed rate will reduce periods of high demand which constrain the grid.

The programs mentioned have a proven track record of providing benefits to the grid. Residential solar and storage helps reduce demand from the grid during high demand hours and residents can draw from their battery instead of the grid<sup>32</sup>. Similarly, the Thule Ice Energy shifts energy use for air conditioning to low demand hours.

## **D. Benefits to Customers**

Pioneer will assess “Benefits to Customers” on whether the proposed programs will result in lower costs to Pioneer customers.

These programs were specifically sought out due to their ability to help Pioneer customers. This program allows Pioneer customers to have solar and storage systems that normally would not be able to. As mentioned above, Participate Energy handles all maintenance and upkeep of the system and covers upfront installation costs. Thule Energy Storage would also be administered at low upfront cost to the customer.

## **E. Equity**

Pioneer will assess “Equity” on whether the proposed program will disproportionately burden certain populations.

These programs are also structured to reduce upfront costs for customers which means that lower income individuals can take advantage of the program. This creates an equal opportunity for all populations to participate and realize the benefits of these load shifting programs.

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<sup>31</sup> Featured Deployments, Thule Energy Storage, <https://www.thuleenergystorage.com/projects/>, (last visited March 7, 2024).

<sup>32</sup> Hou Sheng Zhou, *A case study on the behavior of residential battery energy storage systems during network demand peaks*, Renewable Energy, Dec. 2021.

## F. Conclusion – Hardware Programs

The LMS goals, articulated in §1623.1(a)(1) of the amended regulations, are to incentivize the use of electricity at off-peak hours, encouraging the control of daily and seasonal peak loads to improve electric system efficiency and reliability, lessening or delaying the need for new electrical capacity, and reducing fossil fuel consumption and greenhouse gas emissions. In weighing all the factors (Cost Effectiveness, Technological Feasibility, Benefits to the Grid, Benefits to Customers, and Equity), these programs will achieve the aims of the LMS regulations in a consistently effective manner without leading to inequitable results. They are cost effective as they rely on proven technologies and do not require substantial staff time to implement. Similarly, they are technologically feasible as the technologies are commercially available and not experimental. Studies show they provide proven benefits to the grid. Customers are able to benefit as these programs are designed to be provided to customers with little or no upfront cost. Finally, for the same rationale, these programs are equitable as lower income ratepayers can access the programs at little or no upfront cost.

## II. Incentive Based Program Paired with Software

Pioneer believes that an incentive-based program would be more successful in consistently shifting energy usage than a punitive based one. With this in mind, Pioneer staff has been meeting with Sonoma Clean Power staff to implement a program similar to their GridSavvy program. This program offers customers that reduce their load during peak hours compensation that can be redeemed or donated to a participating nonprofit organization. An alert is sent to participating customers in advance of an anticipated peak load period. The compensation is based on kWh reduced during the event and there is no penalty if the customer decides to continue their usage as usual. This program is expected to launch by the second quarter of 2025.

In conjunction with this program, Pioneer is exploring leveraging software to automate smart appliances. As mentioned above, studies show that technology is required to consistently shift load for demand response. The software would also be combined with an EV charging optimization program.

The table has the name of the program, a brief description of the program, Pioneer staff’s progress on the program, and the expected date of implementation:

| Program Provider                                   | Program Description   | Progress          | Date of Implementation |
|--|---|-------------------|------------------------|
| Pioneer would need to issue an RFO for a provider. | Incentivization based program which pays Pioneer customers who shift their energy usage | Under Development | Second Quarter of 2025 |

|  |   |                   |                        |
|--|---|-------------------|------------------------|
|  | during peak demand times.   |                   |                        |
| Virtual Peaker                                     | Operates a Distributed Energy Resource Management System (DERMS) platform. This platform connects with customers smart devices to help shift energy habits to low-cost hours. | Under Development | Second Quarter of 2026 |
| Pioneer would need to issue an RFO for a provider. | EV Charging Optimization.   | Under Development | Fourth Quarter of 2024 |

## A. Cost Effectiveness

Pioneer will assess “Effectiveness” whether the program will consistently lead to the desired load shifting outcome. “Cost” will also be assessed based on the actual cost to Pioneer.

Studies show that incentive-based approaches effectively reduce peak load during heatwave events without harm to vulnerable groups<sup>33</sup>. Notably, in a study of incentive-based demand response in China, researchers found that the repeated and frequent implementation of the program did not result in an attenuation of the effect<sup>34</sup>. This demonstrates that incentive-based demand response can lead to consistent results in shifting energy usage.

In order to gauge the complete financial cost and solicit competitive proposals, Pioneer would need to issue a Request for Offers. This process aims to assess the feasibility and pricing structures associated with implementing an incentive-based program to shift energy usage. At this current junction, in preliminary conversations with other CCAs with similar programs, costs are not presumed to be substantial.

## B. Technological Feasibility

Pioneer will assess “Technological Feasibility” based on whether the requisite technology is commercial and not experimental or theoretical.

These programs have been shown to be technologically feasible in other CCA service areas<sup>35</sup>. These appliances and software have been on the market now for many years. If the program

<sup>33</sup> Wang, Lu, Want, Qiu, Zhang, Li, Li, and Zhao, *Incentive based emergency demand response effectively reduces peak load during heatwave without harm to vulnerable groups*, Nature Communications, Oct. 2023.

<sup>34</sup> *Id.*

<sup>35</sup> GridSavvy Rewards, Sonoma Clean Power, <https://sonomacleanpower.org/programs/gridsavvyrewards>, (last viewed March 7, 2024).

intends to make the periods of load shifting more granular (i.e. sub-hourly) Pioneer would need to determine how many meters in our service area are Automated Metering Infrastructure (AMI).

### **C. Benefits to the Grid**

Pioneer will assess “Benefits to the Grid” on whether the proposed programs will reduce periods of high demand which constrain the grid.

These programs will help shift load during peak load hours which in turn reduces strain on the grid. As seen in the previously mentioned study, incentive-based programs result in consistent load reduction<sup>36</sup>. These load reductions, especially in periods of high demand, mean less price volatility and lowers the change of a brown out.

### **D. Benefits to Customers**

Pioneer will assess “Benefits to Customers” on whether the proposed programs will result in lower costs to Pioneer customers.

This program will provide customers with the ability to either earn money from their shift in energy consumption or donate to a participating nonprofit. Rather than being punitive, these programs reward behavior with money that can go back into their account. Through this rebate program, Pioneer customers will realize lower costs.

### **E. Equity**

Pioneer will assess “Equity” on whether the proposed program will disproportionately burden certain populations.

As mentioned above, studies show that these types of programs are more equitable than punitive programs<sup>37</sup>. Rather than risk losing money, they can instead earn money by changing their habits. A customer will not have to worry about a large bill due to factors outside their control (say a medically necessary reason to keep an air conditioner running). Because of this model, no population can be disproportionately burdened with the costs of shifting energy usage.

### **F. Conclusion - Incentive Based Program Paired with Software**

The LMS goals, articulated in §1623.1(a)(1) of the amended regulations, are to encourage the use of electricity at off-peak hours, encouraging the control of daily and seasonal peak loads to improve electric system efficiency and reliability, lessening or delaying the need for new electrical capacity, and reducing fossil fuel consumption and greenhouse gas emissions. In weighing all the factors (Cost Effectiveness, Technological Feasibility, Benefits to the Grid, Benefits to Customers, and Equity), these programs will achieve the aims of the LMS regulations

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<sup>36</sup> Wang, *supra* at note 34.

<sup>37</sup> *Id.*

in a consistently effective manner without leading to inequitable results. They are cost-effective as studies show incentive based cost shifting programs lead to consistent load shifting. The programs rely on commercially available technology which means they are technologically feasible. Studies show that these types of programs lead to consistent load shifting behavior which provides benefits to the grid. The programs are beneficial to customers as they are rewarded, rather than penalized for shifting their behavior. Finally, for the same reason, these programs are equitable as low-income individuals are able to avoid the risk of a catastrophic electricity bill.

### III. Existing Government Programs

The table has the name of the government program, a brief description of the program, Pioneer staff’s progress on the program, and the expected date of implementation:

| Program Name | Program Description   | Progress   | Date of Implementation          |
|--------------|---|--|---------------------------------|
| AgFIT        | The Flexible Irrigation Pilot Program for Agriculture (AgFIT) was successfully piloted by Valley Clean Energy. The D.24-01-032 ruling expanded the program to all agricultural customers and allows all CCAs in PG&E service territory to participate until its conclusion on December 31, 2027. This program would be administered by PG&E and would use automation technology and/or a notice to shift agriculture pumping times. | Pioneer must submit an Advice Letter stating their intent to participate by March 2025 | The Second Quarter of 2025      |
| ELRP         | A program administered by the IOUs which pays customers who voluntarily reduce electricity demand during a grid emergency. The program also pays customers who produce energy during a grid emergency under certain conditions.   | Currently ongoing  | Set to expire December 31, 2025 |

#### A. Cost Effectiveness

Pioneer will assess “Effectiveness” whether these programs consistently lead to the desired load shifting outcome. “Cost” will also be assessed based on the actual cost to Pioneer.

These programs have been proven to be effective at shifting energy consumption to off-peak hours for irrigation. It is due to their effectiveness<sup>38</sup> that CPUC expanded these programs. Since these programs are administered by the IOUs, they would be administered at no cost to Pioneer.

<sup>38</sup> Staff Proposal on Existing Dynamic Rate Pilot Expansion, R.22-07-005, Aug. 15, 2023.

## **B. Technological Feasibility**

Pioneer will assess “Technological Feasibility” based on whether the requisite technology is commercial and not experimental or theoretical.

Since these are programs that have already been piloted or are currently running, they have proven technological feasible. Any requisite technology is commercially available.

## **C. Benefits to the Grid**

Pioneer will assess “Benefits to the Grid” on whether the proposed programs will reduce periods of high demand which constrain the grid.

The AgFIT program shifts load to times of low demand which reduces strain on the grid. The Emergency Load Reduction Program (ELRP) is a more traditional demand response program but is incentive based rather than punitive. Both are designed to reduce demand from the grid which helps stabilize prices and reduce the risk of brown out.

## **D. Benefits to Customers**

Pioneer will assess “Benefits to Customers” on whether the proposed programs will result in lower costs to Pioneer customers.

Both of these programs provide benefits to customers as they reduce demand during peak periods. Reductions like help stabilize costs which in turn helps keep Pioneer rates low. Furthermore, Pioneer customers that are part of the ELRP program are compensated for the reductions in energy usage, which in turn means they realize lower energy costs.

## **E. Equity**

Pioneer will assess “Equity” on whether the proposed program will disproportionately burden certain populations.

Both of these programs are opt-in incentive based rather than punitive, fostering a more balance and fair outcome. This approach not only encourages compliance but also promotes a positive and cooperative relationship between customers and the LSE, leading to outcomes seen as fairer and more equitable. As mentioned previously, incentive-based programs lead to more equitable outcomes<sup>39</sup>.

## **F. Conclusion – Existing Government Programs**

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<sup>39</sup> Wang, *supra* at note 34.

The LMS goals, articulated in §1623.1(a)(1) of the amended regulations, are to encourage the use of electricity at off-peak hours, encouraging the control of daily and seasonal peak loads to improve electric system efficiency and reliability, lessening or delaying the need for new electrical capacity, and reducing fossil fuel consumption and greenhouse gas emissions. In weighing all the factors (Cost Effectiveness, Technological Feasibility, Benefits to the Grid, Benefits to Customers, and Equity), these programs will achieve the aims of the LMS regulations in a consistently effective manner without leading to inequitable results. These programs are cost effective as the CPUC has found them to be effective at consistently shifting load. They are also not administered by Pioneer, so cost is negligible. As they are existing programs, they are shown to be technologically feasible. The programs provide proven benefits to the grid by shifting load times away from peak periods. Since these are incentive based, they provide benefits to customers as they see a gain from shifting behavior rather than a penalty. Finally, for a similar rationale, they are incentive-based so the programs do not lead to inequitable outcomes.

## 4. Summary

The amended LMS regulations require Pioneer to assess implementing a marginal cost-based rate, and if that implementation would result in the goals of the regulation. These goals are to encourage the use of electricity at off-peak hours, encouraging the control of daily and seasonal peak loads to improve electric system efficiency and reliability, lessening, or delaying the need for new electrical capacity, and reducing fossil fuel consumption and greenhouse gas emissions. In assessing the if the implementation will achieve these goals, Pioneer must weigh cost-effectiveness, technological feasibility, benefits to the grid, benefits to customers, and equity. If, after weighing these factors, Pioneer chooses not to implement a marginal cost-based rate, Pioneer must instead provide load shifting programs designed to achieve the previously state goals.

Pioneer assessed the implementation of a marginal cost-based rate and found that the rate scheme is not cost effective in achieving the stated goals of the regulation. There is not enough substantive evidence that a marginal cost-based rate would lead to consistent energy shifting behavior for the large cost that would be incurred by Pioneer. Currently, Pioneer does not have access to real time meter data which is required for the implementation of a rate like this. Accessing that data would require significant costs and staff time for Pioneer. The rate also may be punitive and lead to inequitable outcomes for lower income customers. With that in mind, Pioneer has developed the following list of programs which will achieve the goals of the regulation:

| Program Provider   | Program Description  | Progress                       | Date of Implementation |
|--------------------|--|--------------------------------|------------------------|
| Participate Energy | Pioneer customers contract with Participate Energy for leased home solar and storage products. These customers are aggregated into a virtual power plant. It shifts energy | Pioneer Board approved program | Second Quarter of 2024 |

|  |   |                   |                        |
|--|---|-------------------|------------------------|
|  | usage by charging the battery when times are cheapest (compared to self-generation) and then uses power from the battery at high-cost hours.  |                   |                        |
| Thule Energy Storage                               | Pioneer customers install Thule’s proprietary technology in line with the air conditioning system at low upfront cost to the customer. This technology freezes water into ice during periods of low demand and then thaws the ice as part of the air conditioning system during periods of high demand. | Under Development | Second Quarter of 2025 |
| Pioneer would need to issue an RFO for a provider. | Incentivization based program which pays Pioneer customers who shift their energy usage during peak demand times.   | Under Development | Second Quarter of 2025 |
| Virtual Peaker                                     | Operates a Distributed Energy Resource Management System (DERMS) platform. This platform connects with customers smart devices to help shift energy habits to low-cost hours.   | Under Development | Second Quarter of 2026 |
| Pioneer would need to issue an RFO for a provider. | EV Charging Optimization.   | Under Development | Fourth Quarter of 2024 |

### Staff Report – Item 3

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To: The Governing Board

From: Cianan Mauk, Power Supply Contracts Manager

Item 3: Adopt a Resolution Approving Pioneer Community Energy’s Load Management Standards Compliance Plan

Date: March 21, 2024

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#### **RECOMMENDATION**

Adopt a resolution approving Pioneer Community Energy’s (Pioneer) Load Management Standards Compliance Plan (Plan) and authorizing the Plan to be delivered to the California Energy Commission (CEC).

#### **BACKGROUND**

In January of 2023 the CEC adopted new Load Management Standards to better align electricity consumption with generator schedules. These standards have the stated goals of encouraging the use of electricity at off-peak hours, encouraging the control of daily and seasonal peak loads to improve electric system efficiency and reliability, lessening, or delaying the need for new electrical capacity, and reducing fossil fuel consumption and greenhouse gas emissions. These new standards make several requests of all load-serving entities (LSEs), including Pioneer. Among them is the request that Pioneer assess whether the implementation of a marginal cost-based rate will achieve the goals of the regulations and if found not likely to achieve these goals, to provide a list of load-shifting programs that will achieve the stated goals.

Per the requirements of the regulation, a marginal cost-based rate must be assessed under several factors (Cost Effectiveness, Technological Feasibility, Benefits to the Grid, Benefits to Customers, and Equity). This analysis must be conducted for each Pioneer rate class. CEC guidance provides a broad definition for “rate class,” so for ease of understanding, Pioneer has divided its rates into two classes: Residential and Commercial/Industrial. Due to the way the regulations are written and the provided CEC guidance, the Compliance Plan has redundant information. For this reason, a summary has been provided at the end of this document.

This plan is non-binding on Pioneer and all programs discussed on the roadmap will still require future Board authorization. Pioneer is using this opportunity to appraise the Board of its future program plans.

#### **ANALYSIS & DISCUSSION**

In weighing the factors prescribed by the regulation, Pioneer finds that marginal cost-based rates are not effective enough considering the associated cost of implementation to achieve the goals of the LMS regulations. In analyzing studies with data from LSEs that implemented similar rates, Pioneer does not find that the rate leads to consistent load shifting. Pioneer currently has a staff of fourteen individuals with many necessary business functions handled by outside contractors. Implementing a new rate of this type would require significant investment of Pioneer money and staff time. Furthermore, Pioneer does not have access to real time meter data and cannot properly ascertain the costs associated with acquiring said data.

In the alternative of implementing a marginal cost-based rate, Pioneer has developed the following roadmap for programs which will achieve the stated goals of the regulations:

| Program Provider                                   | Program Description   | Progress                       | Date of Implementation |
|--|---|--------------------------------|------------------------|
| Participate Energy                                 | Pioneer customers contract with Participate Energy for leased home solar and storage products. These customers are aggregated into a virtual power plant. It shifts energy usage by charging the battery when times are cheapest (compared to self-generation) and then uses power from the battery at high-cost hours. | Pioneer Board approved program | Second Quarter of 2024 |
| Thule Energy Storage                               | Pioneer customers install Thule's proprietary technology in line with the air conditioning system at low upfront cost to the customer. This technology freezes water into ice during periods of low demand and then thaws the ice as part of the air conditioning system during periods of high demand.                 | Under Development              | Second Quarter of 2025 |
| Pioneer would need to issue an RFO for a provider. | Incentivization based program which pays Pioneer customers who shift their energy usage during peak demand times.   | Under Development              | Second Quarter of 2025 |
| Virtual Peaker                                     | Operates a Distributed Energy Resource Management System (DERMS) platform. This platform connects with customers smart devices to help shift energy habits to low-cost hours.   | Under Development              | Second Quarter of 2026 |
| Pioneer would need to issue an RFO for a provider. | EV Charging Optimization.   | Under Development              | Fourth Quarter of 2024 |

Budget Considerations and Calculations

Since this plan is non-binding, and all discussed programs on the road map must be approved by the Pioneer Board before implementation, there are no budgetary considerations for this item.

**ATTACHMENTS**

- A. Resolution Approving and Authorizing the Pioneer Load Management Standards Compliance Plan
- B. Pioneer Load Management Standards Plan

| Rate Name | RIN - Calpine       | RIN - MIDAS         |
|-----------|---------------------|---------------------|
| A-1-B     | USCA-XXPR-0001-0000 | USCA-XXPR-0001-0000 |
| A-1-B-P   | USCA-XXPR-0002-0000 | USCA-XXPR-0002-0000 |
| A-10-B    | USCA-XXPR-0003-0000 | USCA-XXPR-0003-0000 |
| A-10-B-P  | USCA-XXPR-0004-0000 | USCA-XXPR-0004-0000 |
| A-6       | USCA-XXPR-0005-0000 | USCA-XXPR-0005-0000 |
| A-6-P     | USCA-XXPR-0006-0000 | USCA-XXPR-0006-0000 |
| A-ST-P    | USCA-XXPR-0007-0000 | USCA-XXPR-0007-0000 |
| A-ST-S    | USCA-XXPR-0008-0000 | USCA-XXPR-0008-0000 |
| A-ST-T    | USCA-XXPR-0009-0000 | USCA-XXPR-0009-0000 |
| AG-4-A    | USCA-XXPR-0010-0000 | USCA-XXPR-0010-0000 |
| AG-4-B    | USCA-XXPR-0011-0000 | USCA-XXPR-0011-0000 |
| AG-4-C    | USCA-XXPR-0012-0000 | USCA-XXPR-0012-0000 |
| AG-5-A    | USCA-XXPR-0013-0000 | USCA-XXPR-0013-0000 |
| AG-5-B    | USCA-XXPR-0014-0000 | USCA-XXPR-0014-0000 |
| AG-5-C    | USCA-XXPR-0015-0000 | USCA-XXPR-0015-0000 |
| AG-A1     | USCA-XXPR-0016-0000 | USCA-XXPR-0016-0000 |
| AG-A2     | USCA-XXPR-0017-0000 | USCA-XXPR-0017-0000 |
| AG-B      | USCA-XXPR-0018-0000 | USCA-XXPR-0018-0000 |
| AG-C      | USCA-XXPR-0019-0000 | USCA-XXPR-0019-0000 |
| AG-F-A1   | USCA-XXPR-0020-0000 | USCA-XXPR-0020-0000 |
| AG-F-A2   | USCA-XXPR-0021-0000 | USCA-XXPR-0021-0000 |
| AG-F-A3   | USCA-XXPR-0022-0000 | USCA-XXPR-0022-0000 |
| AG-F-B1   | USCA-XXPR-0023-0000 | USCA-XXPR-0023-0000 |
| AG-F-B2   | USCA-XXPR-0024-0000 | USCA-XXPR-0024-0000 |
| AG-F-B3   | USCA-XXPR-0025-0000 | USCA-XXPR-0025-0000 |
| AG-F-C1   | USCA-XXPR-0026-0000 | USCA-XXPR-0026-0000 |
| AG-F-C2   | USCA-XXPR-0027-0000 | USCA-XXPR-0027-0000 |
| AG-F-C3   | USCA-XXPR-0028-0000 | USCA-XXPR-0028-0000 |
| AG-R-A    | USCA-XXPR-0029-0000 | USCA-XXPR-0029-0000 |
| AG-R-B    | USCA-XXPR-0030-0000 | USCA-XXPR-0030-0000 |
| AG-V-A    | USCA-XXPR-0031-0000 | USCA-XXPR-0031-0000 |
| AG-V-B    | USCA-XXPR-0032-0000 | USCA-XXPR-0032-0000 |
| B-1       | USCA-XXPR-0033-0000 | USCA-XXPR-0033-0000 |
| B-1-ST    | USCA-XXPR-0034-0000 | USCA-XXPR-0034-0000 |
| B-10-P    | USCA-XXPR-0035-0000 | USCA-XXPR-0035-0000 |
| B-10-S    | USCA-XXPR-0036-0000 | USCA-XXPR-0036-0000 |
| B-10-T    | USCA-XXPR-0037-0000 | USCA-XXPR-0037-0000 |
| B-19-P    | USCA-XXPR-0038-0000 | USCA-XXPR-0038-0000 |
| B-19-R-P  | USCA-XXPR-0039-0000 | USCA-XXPR-0039-0000 |
| B-19-R-S  | USCA-XXPR-0040-0000 | USCA-XXPR-0040-0000 |
| B-19-R-T  | USCA-XXPR-0041-0000 | USCA-XXPR-0041-0000 |
| B-19-S    | USCA-XXPR-0042-0000 | USCA-XXPR-0042-0000 |
| B-19-S-P  | USCA-XXPR-0043-0000 | USCA-XXPR-0043-0000 |

|                            |                     |                     |
|----------------------------|---------------------|---------------------|
| B-19-S-S                   | USCA-XXPR-0044-0000 | USCA-XXPR-0044-0000 |
| B-19-S-T                   | USCA-XXPR-0045-0000 | USCA-XXPR-0045-0000 |
| B-19-T                     | USCA-XXPR-0046-0000 | USCA-XXPR-0046-0000 |
| B-20-P                     | USCA-XXPR-0047-0000 | USCA-XXPR-0047-0000 |
| B-20-R-P                   | USCA-XXPR-0048-0000 | USCA-XXPR-0048-0000 |
| B-20-R-S                   | USCA-XXPR-0049-0000 | USCA-XXPR-0049-0000 |
| B-20-R-T                   | USCA-XXPR-0050-0000 | USCA-XXPR-0050-0000 |
| B-20-S                     | USCA-XXPR-0051-0000 | USCA-XXPR-0051-0000 |
| B-20-S-P                   | USCA-XXPR-0052-0000 | USCA-XXPR-0052-0000 |
| B-20-S-S                   | USCA-XXPR-0053-0000 | USCA-XXPR-0053-0000 |
| B-20-S-T                   | USCA-XXPR-0054-0000 | USCA-XXPR-0054-0000 |
| B-20-T                     | USCA-XXPR-0055-0000 | USCA-XXPR-0055-0000 |
| B-6                        | USCA-XXPR-0056-0000 | USCA-XXPR-0056-0000 |
| B-EV-1                     | USCA-XXPR-0057-0000 | USCA-XXPR-0057-0000 |
| B-EV-2-P                   | USCA-XXPR-0058-0000 | USCA-XXPR-0058-0000 |
| B-EV-2-S                   | USCA-XXPR-0059-0000 | USCA-XXPR-0059-0000 |
| E-19-P                     | USCA-XXPR-0060-0000 | USCA-XXPR-0060-0000 |
| E-19-R-S                   | USCA-XXPR-0061-0000 | USCA-XXPR-0061-0000 |
| E-19-S                     | USCA-XXPR-0062-0000 | USCA-XXPR-0062-0000 |
| E-19-T                     | USCA-XXPR-0063-0000 | USCA-XXPR-0063-0000 |
| E-20-P                     | USCA-XXPR-0064-0000 | USCA-XXPR-0064-0000 |
| E-20-S                     | USCA-XXPR-0065-0000 | USCA-XXPR-0065-0000 |
| E-20-T                     | USCA-XXPR-0066-0000 | USCA-XXPR-0066-0000 |
| E-6                        | USCA-XXPR-0067-0000 | USCA-XXPR-0067-0000 |
| E-ELEC                     | USCA-XXPR-0068-0000 | USCA-XXPR-0068-0000 |
| E-EV                       | USCA-XXPR-0069-0000 | USCA-XXPR-0069-0000 |
| E-EV2-A                    | USCA-XXPR-0070-0000 | USCA-XXPR-0070-0000 |
| E-TOU-B                    | USCA-XXPR-0071-0000 | USCA-XXPR-0071-0000 |
| E-TOU-C3                   | USCA-XXPR-0072-0000 | USCA-XXPR-0072-0000 |
| E-TOU-D                    | USCA-XXPR-0073-0000 | USCA-XXPR-0073-0000 |
| S-B-P                      | USCA-XXPR-0074-0000 | USCA-XXPR-0074-0000 |
| S-B-S                      | USCA-XXPR-0075-0000 | USCA-XXPR-0075-0000 |
| S-B-T                      | USCA-XXPR-0076-0000 | USCA-XXPR-0076-0000 |
| A-1-B- Pioneer Green100    | USCA-XXPR-0080-0000 | USCA-XXPR-0080-0000 |
| A-1-B-P- Pioneer Green100  | USCA-XXPR-0081-0000 | USCA-XXPR-0081-0000 |
| A-10-B- Pioneer Green100   | USCA-XXPR-0082-0000 | USCA-XXPR-0082-0000 |
| A-10-B-P- Pioneer Green100 | USCA-XXPR-0083-0000 | USCA-XXPR-0083-0000 |
| A-6- Pioneer Green100      | USCA-XXPR-0084-0000 | USCA-XXPR-0084-0000 |
| A-6-P- Pioneer Green100    | USCA-XXPR-0085-0000 | USCA-XXPR-0085-0000 |
| A-ST-P- Pioneer Green100   | USCA-XXPR-0086-0000 | USCA-XXPR-0086-0000 |
| A-ST-S- Pioneer Green100   | USCA-XXPR-0087-0000 | USCA-XXPR-0087-0000 |
| A-ST-T- Pioneer Green100   | USCA-XXPR-0088-0000 | USCA-XXPR-0088-0000 |
| AG-4-A- Pioneer Green100   | USCA-XXPR-0089-0000 | USCA-XXPR-0089-0000 |
| AG-4-B- Pioneer Green100   | USCA-XXPR-0090-0000 | USCA-XXPR-0090-0000 |

|                            |                     |                     |
|----------------------------|---------------------|---------------------|
| AG-4-C- Pioneer Green100   | USCA-XXPR-0091-0000 | USCA-XXPR-0091-0000 |
| AG-5-A- Pioneer Green100   | USCA-XXPR-0092-0000 | USCA-XXPR-0092-0000 |
| AG-5-B- Pioneer Green100   | USCA-XXPR-0093-0000 | USCA-XXPR-0093-0000 |
| AG-5-C- Pioneer Green100   | USCA-XXPR-0094-0000 | USCA-XXPR-0094-0000 |
| AG-A1- Pioneer Green100    | USCA-XXPR-0095-0000 | USCA-XXPR-0095-0000 |
| AG-A2- Pioneer Green100    | USCA-XXPR-0096-0000 | USCA-XXPR-0096-0000 |
| AG-B- Pioneer Green100     | USCA-XXPR-0097-0000 | USCA-XXPR-0097-0000 |
| AG-C- Pioneer Green100     | USCA-XXPR-0098-0000 | USCA-XXPR-0098-0000 |
| AG-F-A1- Pioneer Green100  | USCA-XXPR-0099-0000 | USCA-XXPR-0099-0000 |
| AG-F-A2- Pioneer Green100  | USCA-XXPR-0100-0000 | USCA-XXPR-0100-0000 |
| AG-F-A3- Pioneer Green100  | USCA-XXPR-0101-0000 | USCA-XXPR-0101-0000 |
| AG-F-B1- Pioneer Green100  | USCA-XXPR-0102-0000 | USCA-XXPR-0102-0000 |
| AG-F-B2- Pioneer Green100  | USCA-XXPR-0103-0000 | USCA-XXPR-0103-0000 |
| AG-F-B3- Pioneer Green100  | USCA-XXPR-0104-0000 | USCA-XXPR-0104-0000 |
| AG-F-C1- Pioneer Green100  | USCA-XXPR-0105-0000 | USCA-XXPR-0105-0000 |
| AG-F-C2- Pioneer Green100  | USCA-XXPR-0106-0000 | USCA-XXPR-0106-0000 |
| AG-F-C3- Pioneer Green100  | USCA-XXPR-0107-0000 | USCA-XXPR-0107-0000 |
| AG-R-A- Pioneer Green100   | USCA-XXPR-0108-0000 | USCA-XXPR-0108-0000 |
| AG-R-B- Pioneer Green100   | USCA-XXPR-0109-0000 | USCA-XXPR-0109-0000 |
| AG-V-A- Pioneer Green100   | USCA-XXPR-0110-0000 | USCA-XXPR-0110-0000 |
| AG-V-B- Pioneer Green100   | USCA-XXPR-0111-0000 | USCA-XXPR-0111-0000 |
| B-1- Pioneer Green100      | USCA-XXPR-0112-0000 | USCA-XXPR-0112-0000 |
| B-1-ST- Pioneer Green100   | USCA-XXPR-0113-0000 | USCA-XXPR-0113-0000 |
| B-10-P- Pioneer Green100   | USCA-XXPR-0114-0000 | USCA-XXPR-0114-0000 |
| B-10-S- Pioneer Green100   | USCA-XXPR-0115-0000 | USCA-XXPR-0115-0000 |
| B-10-T- Pioneer Green100   | USCA-XXPR-0116-0000 | USCA-XXPR-0116-0000 |
| B-19-P- Pioneer Green100   | USCA-XXPR-0117-0000 | USCA-XXPR-0117-0000 |
| B-19-R-P- Pioneer Green100 | USCA-XXPR-0118-0000 | USCA-XXPR-0118-0000 |
| B-19-R-S- Pioneer Green100 | USCA-XXPR-0119-0000 | USCA-XXPR-0119-0000 |
| B-19-R-T- Pioneer Green100 | USCA-XXPR-0120-0000 | USCA-XXPR-0120-0000 |
| B-19-S- Pioneer Green100   | USCA-XXPR-0121-0000 | USCA-XXPR-0121-0000 |
| B-19-S-P- Pioneer Green100 | USCA-XXPR-0122-0000 | USCA-XXPR-0122-0000 |
| B-19-S-S- Pioneer Green100 | USCA-XXPR-0123-0000 | USCA-XXPR-0123-0000 |
| B-19-S-T- Pioneer Green100 | USCA-XXPR-0124-0000 | USCA-XXPR-0124-0000 |
| B-19-T- Pioneer Green100   | USCA-XXPR-0125-0000 | USCA-XXPR-0125-0000 |
| B-20-P- Pioneer Green100   | USCA-XXPR-0126-0000 | USCA-XXPR-0126-0000 |
| B-20-R-P- Pioneer Green100 | USCA-XXPR-0127-0000 | USCA-XXPR-0127-0000 |
| B-20-R-S- Pioneer Green100 | USCA-XXPR-0128-0000 | USCA-XXPR-0128-0000 |
| B-20-R-T- Pioneer Green100 | USCA-XXPR-0129-0000 | USCA-XXPR-0129-0000 |
| B-20-S- Pioneer Green100   | USCA-XXPR-0130-0000 | USCA-XXPR-0130-0000 |
| B-20-S-P- Pioneer Green100 | USCA-XXPR-0131-0000 | USCA-XXPR-0131-0000 |
| B-20-S-S- Pioneer Green100 | USCA-XXPR-0132-0000 | USCA-XXPR-0132-0000 |
| B-20-S-T- Pioneer Green100 | USCA-XXPR-0133-0000 | USCA-XXPR-0133-0000 |
| B-20-T- Pioneer Green100   | USCA-XXPR-0134-0000 | USCA-XXPR-0134-0000 |

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| B-6- Pioneer Green100      | USCA-XXPR-0135-0000 | USCA-XXPR-0135-0000 |
| B-EV-1- Pioneer Green100   | USCA-XXPR-0136-0000 | USCA-XXPR-0136-0000 |
| B-EV-2-P- Pioneer Green100 | USCA-XXPR-0137-0000 | USCA-XXPR-0137-0000 |
| B-EV-2-S- Pioneer Green100 | USCA-XXPR-0138-0000 | USCA-XXPR-0138-0000 |
| E-19-P- Pioneer Green100   | USCA-XXPR-0139-0000 | USCA-XXPR-0139-0000 |
| E-19-R-S- Pioneer Green100 | USCA-XXPR-0140-0000 | USCA-XXPR-0140-0000 |
| E-19-S- Pioneer Green100   | USCA-XXPR-0141-0000 | USCA-XXPR-0141-0000 |
| E-19-T- Pioneer Green100   | USCA-XXPR-0142-0000 | USCA-XXPR-0142-0000 |
| E-20-P- Pioneer Green100   | USCA-XXPR-0143-0000 | USCA-XXPR-0143-0000 |
| E-20-S- Pioneer Green100   | USCA-XXPR-0144-0000 | USCA-XXPR-0144-0000 |
| E-20-T- Pioneer Green100   | USCA-XXPR-0145-0000 | USCA-XXPR-0145-0000 |
| E-6- Pioneer Green100      | USCA-XXPR-0146-0000 | USCA-XXPR-0146-0000 |
| E-ELEC- Pioneer Green100   | USCA-XXPR-0147-0000 | USCA-XXPR-0147-0000 |
| E-EV- Pioneer Green100     | USCA-XXPR-0148-0000 | USCA-XXPR-0148-0000 |
| E-EV2-A- Pioneer Green100  | USCA-XXPR-0149-0000 | USCA-XXPR-0149-0000 |
| E-TOU-B- Pioneer Green100  | USCA-XXPR-0150-0000 | USCA-XXPR-0150-0000 |
| E-TOU-C3- Pioneer Green100 | USCA-XXPR-0151-0000 | USCA-XXPR-0151-0000 |
| E-TOU-D- Pioneer Green100  | USCA-XXPR-0152-0000 | USCA-XXPR-0152-0000 |
| S-B-P- Pioneer Green100    | USCA-XXPR-0153-0000 | USCA-XXPR-0153-0000 |
| S-B-S- Pioneer Green100    | USCA-XXPR-0154-0000 | USCA-XXPR-0154-0000 |
| S-B-T- Pioneer Green100    | USCA-XXPR-0155-0000 | USCA-XXPR-0155-0000 |