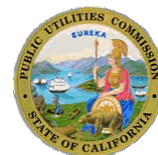


**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



**FILED**

10/15/21  
01:28 PM

Order Instituting Rulemaking to Continue Electric  
Integrated Resource Planning and Related  
Procurement Processes.

Rulemaking 20-05-003  
(Filed May 7, 2020)

**LIBERTY UTILITIES (CALPECO ELECTRIC) LLC (U 933 E)  
RE-FILING OF RELATED 2020 INTEGRATED RESOURCE PLAN INFORMATION**

**PUBLIC VERSION**

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October 15, 2021

*Attorneys for Liberty Utilities (CalPeco  
Electric) LLC*

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Continue Electric  
Integrated Resource Planning and Related  
Procurement Processes.

Rulemaking 20-05-003  
(Filed May 7, 2020)

**LIBERTY UTILITIES (CALPECO ELECTRIC) LLC (U 933 E)  
RE-FILING OF RELATED 2020 INTEGRATED RESOURCE PLAN INFORMATION**

**PUBLIC VERSION**

Pursuant to the September 23, 2021 *Administrative Law Judge’s Ruling Granting Motions to File Under Seal for Portions of Individual Integrated Resource Plans and Requiring Re-Filing of Certain Related Information* (“Ruling”), Liberty Utilities (CalPeco Electric) LLC (“Liberty”) submits updated elements of its 2020 Integrated Resource Plan (“IRP”).

The Ruling explained that the Commission’s staff has been working to “understand, reconcile, and correct all of the information included” in individual load-serving entities’ (“LSE”) 2020 Integrated Resource Plan (“IRP”) submittals. (Ruling at 4.) As a result of this review, LSEs were required to informally update and submit to Commission Energy Division staff certain elements of their IRPs, as requested. The Ruling now “requires every LSE subject to the Commission’s IRP process to file its most updated 2020 IRP information formally within this proceeding, consistent with the information already provided informally to Commission staff, in order to update the record of this proceeding.” (Ruling at 4-5.)

On September 30, 2020, Liberty informally responded to a request from Energy Division Staff to update its confidential, Non-Standard LSE Plan.

///

///

Accordingly, Liberty formally files its updated 2020 IRP information, appended hereto as Attachment 1.

Dated: October 15, 2021

Respectfully submitted,

\_\_\_\_\_  
/s/

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LLC*



ATTACHMENT 1:

SEPTEMBER 30, 2020, UPDATED LIBERTY UTILITIES (CALPECO ELECTRIC) LLC  
(U-933-E) 2020 INTERGRATED RESOURCE PLAN,

“LIB\_v2\_public”

PUBLIC VERSION

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE  
STATE OF CALIFORNIA**

Order Instituting Rulemaking to Continue Electric  
Integrated Resource Planning and Related  
Procurement Processes.

Rulemaking 20-05-003

**LIBERTY UTILITIES (CALPECO ELECTRIC) LLC (U-933-E)  
2020 INTEGRATED RESOURCE PLAN**

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September 1, 2020

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE  
STATE OF CALIFORNIA**

Order Instituting Rulemaking to Continue Electric  
Integrated Resource Planning and Related  
Procurement Processes.

Rulemaking 20-05-003

**LIBERTY UTILITIES (CALPECO ELECTRIC) LLC (U-933-E)  
2020 INTEGRATED RESOURCE PLAN**

**PUBLIC VERSION**

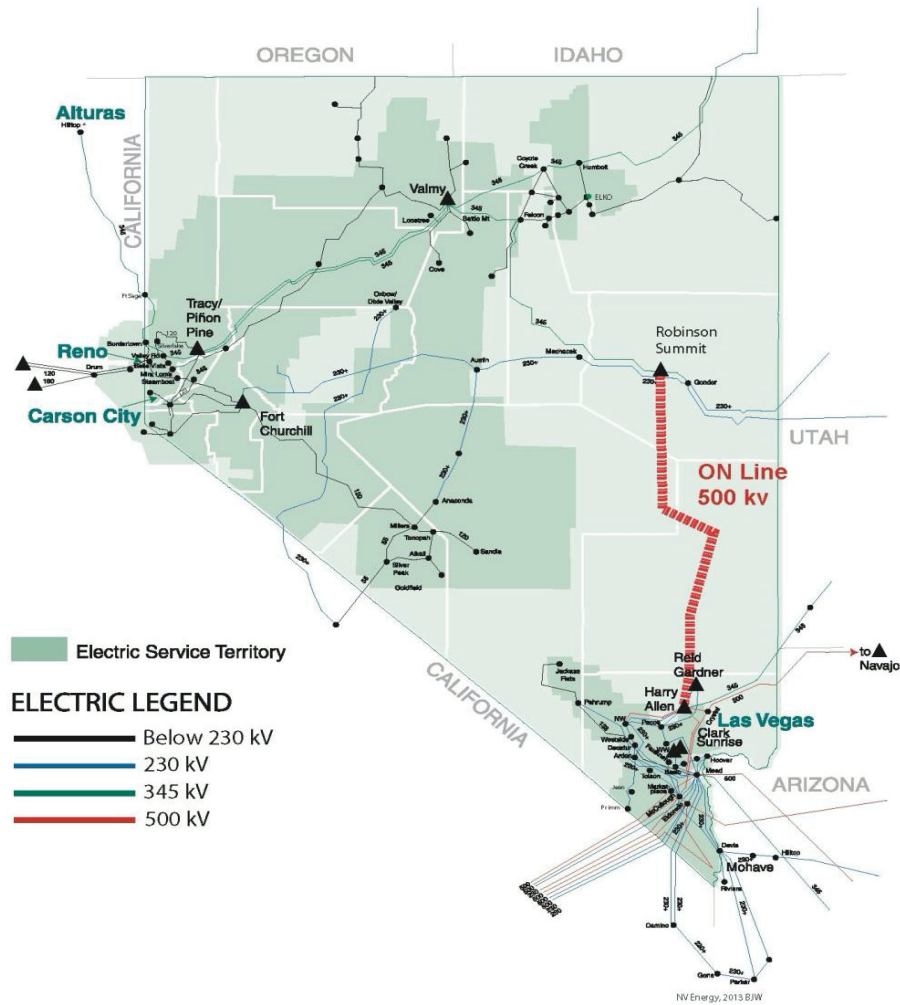
Pursuant to California Public Utilities Commission (“CPUC”) Decision 20-02-038 “2019-2020 Electric Resource Portfolios to Inform Integrated Resource Plans and Transmission Planning” issued March 26, 2020, and the “Administrative Law Judge’s Ruling Correcting April 15, 2020 Ruling Finalizing Load Forecasts and Greenhouse Gas Benchmarks for Individual 2020 Integrated Resource Plan Filings” issued on May 20, 2020, Liberty Utilities (CalPeco Electric) LLC (U 933-E) (“Liberty CalPeco”) submits its Nonstandard LSE Integrated Resource Plan (“IRP”) filing. Accordingly, Liberty CalPeco is filing this Narrative Template as required for Nonstandard LSE IRP filings, but is not filing the Resource Data Template. The exhibits to this narrative are omitted from the public version as they contain confidential data, but the narrative has been structured to avoid disclosure of confidential data.

Liberty CalPeco serves approximately 49,000 electric customers in California, in and around the Lake Tahoe Basin. Its service territory is geographically compact and generally encompasses the western portions of the Lake Tahoe Basin (almost 80% of Liberty CalPeco’s customers are located in the Lake Tahoe Basin). Liberty CalPeco is filing a Nonstandard LSE IRP plan given that it does not operate within the California Independent System Operator (“CAISO”) balancing authority area but is located within the NV Energy Balancing Authority Area (“BAA”) “North System” and has very limited connections to the CAISO.<sup>1</sup> Unlike most California load-serving entities (“LSE”), Liberty CalPeco is winter-peaking with peak loads

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<sup>1</sup> The North System is the portion of NVE Energy’s transmission system in Northern Nevada connected by the ON Line to the South System in Southern Nevada (see the map on p. 11 here: [http://energy.nv.gov/uploadedFiles/energynvgov/content/Programs/TaskForces/2017/11-07-2017\\_Generation-Transmission-Delivery\\_Agenda4\\_NV%20Energy%20Presentation.pdf](http://energy.nv.gov/uploadedFiles/energynvgov/content/Programs/TaskForces/2017/11-07-2017_Generation-Transmission-Delivery_Agenda4_NV%20Energy%20Presentation.pdf))

occurring at night, typically during the holiday season. Further, given Liberty CalPeco's location, it has few industrial customers, but larger seasonal loads associated with ski resorts and hotels. Liberty CalPeco's customers are particularly concerned with climate change and related environmental issues and, as described in greater detail below, Liberty CalPeco is working to exceed minimum renewable and greenhouse gas ("GHG")-free supply requirements to help address these concerns.



///

///

Dated: September 1, 2020

Respectfully submitted,

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# **Non-Standard LSE Plan**

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LIBERTY UTILITIES (CALPECO ELECTRIC) LLC (U 933-E)

2020 INTEGRATED RESOURCE PLAN

SEPTEMBER 1, 2020

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Liberty CalPeco has been authorized to file a Non-Standard Plan and has elected to use the Commission's Narrative Template posted on June 15, 2020, but is not submitting the Clean System Power calculator tool or the Resource Data Template, and is not addressing any of the requirements based on contracted or planned resource information.

## **I. Executive Summary**

Liberty CalPeco, located within the NV Energy balancing authority area, currently serves its approximately 49,000 customers from a combination of owned resources and an energy services agreement with NV Energy. Liberty entered into a multi-year services agreement ("2016 NV Energy Services Agreement"),<sup>2</sup> which became effective on January 1, 2016 and has a term through December 30, 2020. The California Public Utilities Commission ("Commission" or "CPUC") approved Liberty CalPeco's entering the 2016 NV Energy Services Agreement in D.15-12-021 subject to incorporating specified changes. On December 22, 2015, Liberty CalPeco submitted Advice Letter 51-E presenting an amended 2016 NV Energy Services Agreement that revises the agreement in accordance with the requirements of D.15-12-021.

The 2016 NV Energy Services Agreement provides Liberty CalPeco with the majority of its capacity, system power and RPS energy but added the flexibility to displace the purchase of RPS energy from NV Energy to up to a maximum of 60 MW from Liberty CalPeco's own renewable projects. In D.16-01-021 ("Luning Approval Decision"), the Commission authorized Liberty CalPeco to acquire, operate, and maintain the 50 MW Luning Solar Project. The Luning

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<sup>2</sup> See Advice Letter 51-E, Exhibit 4, Second Amended Service Agreement Between Sierra Pacific Power Company and Liberty Utilities (CalPeco Electric) LLC (December 17, 2015).

Solar Project is located in Luning, Nevada and commenced commercial operation in February 2017, displacing 50 MW of RPS energy from the 2016 NV Energy Service Agreement.

Additionally, in Application 16-12-009, Liberty CalPeco requested Commission approval to acquire, finance, own, operate, and maintain the 10 MW Turquoise Solar Project (“Turquoise”). In D.17-12-008 (Turquoise Approval Decision”), the Commission authorized Liberty CalPeco to acquire, own, and operate Turquoise. Liberty CalPeco has provided notice to NV Energy that it would displace certain amounts of RPS energy, which NV Energy would otherwise supply, with generation from Turquoise. Turquoise commenced commercial operation in November 2019.

Liberty CalPeco previously intended to terminate the 2016 NV Energy Services Agreement early (prior to the expiration of the agreement’s original term through December 2020).<sup>3</sup> Liberty CalPeco’s goal, as conveyed in the prior IRP, was to replace the existing supply arrangement with NV Energy through two steps—a short-term competitively sourced bridging arrangement for approximately one year, to be followed by one or more competitive solicitations for utility-owned California RPS-compliant renewable resources, *e.g.*, wind, solar and storage portfolio additions that would expand Liberty CalPeco’s existing 60 MW of solar resources from Luning and Turquoise, and significantly advance Liberty CalPeco’s goal of reaching 100% renewables.<sup>4</sup>

In its effort to exit both the 2016 NV Energy Services Agreement and any future supply services from NV Energy, Liberty CalPeco applied for Network Integrated Transmission Service

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<sup>3</sup> Either Party, by timely providing notice, has the option to terminate the 2016 NV Energy Services Agreement after three years and four months (*i.e.*, by May 1, 2019). See *id.*, at Section 3.

<sup>4</sup> Liberty Utilities (CalPeco Electric) 2018 Integrated Resource Plan filed August 1, 2018, D.19-04-040 pg 73-74.

(“NITS”) under NV Energy’s Open Access Transmission Tariff (“OATT”) to serve its load as of the second quarter of 2019 and initiated solicitations for potential third-party providers.

Unknown to Liberty CalPeco at the time, this request was premised on erroneous information published on NV Energy’s Open Access Same-Time Information System (“OASIS”) portal that overstated the available transmission capacity reflecting a quantity sufficient to support imports into the NV Energy system. The System Impact Study report from NV Energy corrected this error in available transmission capacity resulting in a very limited amount of import capacity for 2021 and no available capacity after 2022. Although Liberty CalPeco explored a number of options with potential third-party suppliers, ultimately this lack of available transmission capacity to import capacity and energy into the NV Energy balancing area left Liberty CalPeco with no commercially reasonable option to move forward with its plans to serve its load by either terminating the 2016 NV Energy Services Agreement early or upon its expiration. Instead, Liberty CalPeco could only proceed with a “bridging agreement” with NV Energy to provide time for potential improvements on the NV Energy transmission system that would make more resources available.

Over the course of the last year, Liberty CalPeco has worked with NV Energy to negotiate and execute a replacement Energy Services Agreement (“2021 NV Energy ESA”) for an additional term of 5 years (less a day) that will allow Liberty CalPeco to develop additional utility-owned renewable resources and explore any possible alternative transmission arrangements. The new cost-based agreement results in direct customer benefits through revision of the demand charge mechanism and rates, exclusion of high GHG resources, and more flexibility for asset development by Liberty CalPeco. Liberty CalPeco anticipates final execution of the 2021 NV Energy ESA shortly after the submission of this IRP, with a request

for prompt Commission approval via advice letter. The 2021 NV Energy ESA will be submitted by advice letter pursuant to D.19-04-040 in order to maintain supplies upon the end of the 2016 NVE Energy Services Agreement.<sup>5</sup>

Despite this disruption to its prior path, Liberty CalPeco continues to shop the Nevada market for power supplied by any third party that has the transmission and capacity to serve Liberty CalPeco's load that not only will enable Liberty CalPeco to provide energy and capacity to its customers, without the risk of transmission availability, but that will also allow for future renewables development. Given the existing, persistent constraints in the NV Energy transmission system that limit potential imports from outside the system, Liberty CalPeco will seek to expand its 50 MW Luning Solar Project by adding up to 60 MW of solar and 240MWh of storage, targeted for an in-service date at the end of 2023 (the "Luning Expansion Project"). The output from the hybrid Luning Expansion Project will be used to serve Liberty CalPeco's customers during the evening peak load hours. This expansion opportunity will leverage the 30% Federal Investment Tax Credit ("ITC") to provide the greatest benefits to Liberty CalPeco's customers, similar to the financial approaches used for Luning and Turquoise. To secure the maximal customer benefits, Liberty CalPeco will request authority to obtain Commission approval of the Luning Expansion Project later this year via a Tier 3 advice letter.

However, until such time as the NV Energy North System is expanded in a way that provides access to imported resources within the region, Liberty CalPeco anticipates that another

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<sup>5</sup> See D.19-04-040, Ordering Paragraph ("OP") No. 7:

7. Liberty Utilities (CalPeco Electric) is authorized to conduct a solicitation for short term electricity resources and file the resulting contract(s) as Tier 2 Advice Letters for Commission consideration. The resulting cost allocation issues, if any, may be handled in its next upcoming energy cost adjustment clause proceeding.

follow-on supply agreement with NV Energy will become necessary. Currently the market within the NV Energy BAA is dynamic due to recent changes in Nevada law which will expand NV Energy's renewables portfolio under that utility's IRP. It is not possible to anticipate what changes will occur within the BAA while the 2021 NV Energy ESA is operating or what new resource opportunities may arise over the course of the next 4-5 years. Accordingly, Liberty CalPeco expects that for the portion of its capacity and energy needs not met by the resource proposals presented here, it will remain a wholesale customer of NV Energy.

To further enhance local reliability within its system, Liberty CalPeco is proposing microgrid projects as well as a behind-the-meter ("BTM") distributed storage program. These projects would address resiliency concerns related to the Wildfire Mitigation Plan during summer periods as well as helping with system challenges during extreme winter weather events. Additionally, inclusion of in-system storage can help the company integrate the larger solar projects and manage demand charge costs for all customers under the 2021 NV Energy ESA.

Liberty CalPeco continues to pursue other potential solar and transmission opportunities within the NV Energy North System area. While optimistic regarding certain potential projects, it is too soon to report on any potential candidate projects now. Liberty CalPeco remains optimistic that pursuing a plan to utilize the 2021 NV Energy ESA followed by the development of additional renewable facilities (likely coupled with storage) will move Liberty CalPeco toward its desired portfolio of 100% renewable energy and low greenhouse gas ("GHG") emitting supplies, albeit on a timeline that is longer than originally contemplated in the prior IRP cycle.

Liberty CalPeco is committed to achieving 100% of the electricity supplied to its customers with low-GHG and renewable energy, as soon as practicable, pending renewable procurement and development opportunities and CPUC approval. Liberty CalPeco's ambitious

goal will not only ensure that RPS targets are satisfied, including the higher RPS targets mandated by SB 100, but that all of its load is served with renewable and/or low-GHG energy. Liberty CalPeco aspires to become the first California IOU to deliver 100% low-GHG and renewable electricity from local and regional sources to 100% of its customers. In addition to the 60 MW of solar resources in operation and approved by the CPUC,<sup>6</sup> the Commission has also authorized Liberty CalPeco's transportation electrification programs.<sup>7</sup> As described above, Liberty CalPeco has negotiated the 2021 NV Energy ESA, and will explore options to either replace, further reduce or modify the extent of its reliance on NV Energy supply arrangements over time with a portfolio of renewable energy, storage and low-GHG emitting supplies in compliance with SB 100 RPS requirements and the IRP decarbonization goals. Liberty CalPeco continues to investigate installation of in-territory distributed storage and micro-grid projects to assist in the management of supply from intermittent power production facilities and support its vehicle electrification projects,<sup>8</sup> while continuing to provide its customers with reliable service throughout its service territory. Moreover, Liberty CalPeco has programs to support customer behind-the-meter ("BTM") solar installations<sup>9</sup> and its low-income energy efficiency program to mitigate some load growth over the planning horizon. These programs contemplated for in-territory deployment will provide additional resiliency to the system, not only during PSPS events, but also during the winter storm season when weather-related events can challenge localized reliability. When not being used for resiliency, these microgrid and BTM storage

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<sup>6</sup> See D.16-01-021 and D.17-12-008.

<sup>7</sup> See Application 17-06-033 and D.18-09-034 as well as A.18-07-025 and D.19-11-017.

<sup>8</sup> See D.18-09-034 and D.19-11-017.

<sup>9</sup> See, e.g., D.16-12-024. Liberty CalPeco also has a program for multi-family solar, but no customers have utilized that program to date.

systems will be managed by Liberty CalPeco to manage demand charges under the 2021 NV Energy ESA providing a system-wide benefit and reducing rates for all customers.

As previously mentioned, one of the central impediments to the planning path presented in the prior IRP submission has been the significant transmission limitations on the NV Energy North System that has essentially precluded import supply options such as higher capacity factor wind from outside Nevada. Recently NV Energy announced a major transmission development effort dubbed the “Greenlink Nevada” transmission project that should add import capacity by around 2026-2031, if approved.<sup>10</sup> Liberty CalPeco will monitor the progress of this multi-stage proposal with an eye toward adjusting its long-term procurement plans as developments merit. We will update the Commission on those developments as warranted, such as in the next IRP cycle.

## **II. Study Design**

In this section, Liberty CalPeco describes its overall process for developing its IRP plans submitted in this filing.

- **System Retail Sales and Wholesale Energy for Load**
  - Liberty CalPeco used the CPUC-assigned retail sales for development of the IRP plans, which is the “Mid-Demand/Mid-AAEE” demand forecast case from the CEC’s 2019 IEPR Form 1.1c adopted in the May 20, 2020 ALJ Ruling;
  - These retail sales quantities were loss-adjusted upward by 4.32% to derive Liberty CalPeco’s wholesale supply requirements for 2020-2030;
  - The loss factor of 4.32% is derived from the transmission loss assumptions that CalPeco is required to use to adjust metered retail sales to wholesale requirements in its CY 2019 GHG report to CARB (2.28% Annual Loss Factor and 2.00% Transmission Loss Factor);

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<sup>10</sup> NV Energy “Greenlink Nevada” transmission project is part July 20, 2020 submission of the fourth amendment to their IRP. See Volume 7 of that filing, posted at <https://www.nvenergy.com/about-nvenergy/rates-regulatory/recent-regulatory-filings>.

- The annual supply requirements reflect bundled customer requirements only—any projected wholesale sales volumes have been excluded;
- These annual supply requirements were then allocated to an hourly shape using the average of Liberty CalPeco’s recorded 2015-2019 hourly system loads to derive the 8760/8784 (leap year) hourly shape.

CalPeco IRP Filing Annual Loads		
	CPUC-Assigned Retail Sales (GWh)	Wholesale Energy For Load (MWh)
		4.32%
2020	553	577,378
2021	551	575,157
2022	552	575,929
2023	552	576,033
2024	553	576,823
2025	554	577,735
2026	555	579,312
2027	557	581,070
2028	560	583,752
2029	562	586,782
2030	565	589,880

Retail Sales from CEC 2019 IEPR Form 1.1c: California Energy Demand 2019-2030 Managed Forecast - Mid Demand / Mid AEE Case, Electricity Deliveries to End Users by Agency (GWh)

- **Required and Optional Portfolios**

Liberty CalPeco is submitting a total of three (3) Conforming Portfolios in this IRP filing, as follows:

Portfolio Selection	2020-2030 Resource Additions (MW)					Conformance with 2030 Standards					2030 Costs of GHG Reductions and RPS Increases				
	Solar	Storage	BTM Storage	Microgrid	Total	2030 GHG Emissions (tonnes)	46 MMT GHG Benchmark	38 MMT GHG Benchmark	RPS % vs. 60% Obligation	Strategy to Meet 60% RPS Obligation	2030 Generation Costs (2019\$ Millions)	2030 GHG Emissions Reduction vs Current Baseline (tonnes)	Cost per Tonne of GHG Reduction (n)=(l)/(m)	2030 RPS % Increase vs. Current Baseline	Cost per % of RPS Increase (p)=(l)/(o)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)=(l)/(m)	(o)	(p)=(l)/(o)
Current Baseline	0	0	0	0	0	123,770	Does Not Conform	Does Not Conform	25.2%	Purchase RECs as Needed	\$42.3				
Portfolio A	60	60	10	4	134	84,158	Out-performs	Out-performs	44.4%	Purchase RECs as Needed	\$44.6	(39,612)	\$1,125.02	19.2%	\$232.56
Portfolio B	8	8	10	4	30	112,251	Conforms		29.2%	Purchase RECs as Needed	\$41.2	(11,519)	\$3,575.77	4.0%	\$1,027.25
Portfolio C	47	47	10	4	108	88,967		Conforms	41.9%	Purchase RECs as Needed	\$42.7	(34,803)	\$1,226.72	16.7%	\$256.34

- **Preferred Conforming Portfolio A.**

Portfolio A is an optional Conforming Portfolio that also is Liberty CalPeco's Preferred Conforming Portfolio given that it represents Liberty CalPeco's Base Plan and also outperforms both the 46 MMT and the 38 MMT statewide targets by producing a Liberty CalPeco 2030 GHG Benchmark of 0.074 MMT:

- 60 MW of existing solar (Turquoise and Luning)
- 4 MW microgrid project to be added January 1, 2024;
- 10 MW BTM storage project to be added January 1, 2024;
- Luning Expansion Project with paired 60 MW solar / 240MWh storage components to be added January 1, 2024.

- **46 MMT Required Conforming Portfolio B.**

Portfolio B is a required Conforming Portfolio whose 2030 GHG Benchmark satisfies Liberty CalPeco's assigned share of the 46 MMT statewide target by producing a Liberty CalPeco 2030 GHG Benchmark of 0.102 MMT:

- 60 MW of existing solar (Turquoise and Luning)
- 4 MW microgrid project to be added January 1, 2024;
- 10 MW BTM storage project to be added January 1, 2024;
- Paired 8 MW solar / 32MWh storage project (scaled-down version of the proposed Luning Expansion Project) to be added January 1, 2024.

- **38 MMT Required Conforming Portfolio C.**

Portfolio C is a required Conforming Portfolio whose 2030 GHG Benchmark satisfies Liberty CalPeco's assigned share of the 38 MMT statewide target by producing a Liberty CalPeco 2030 GHG Benchmark of 0.081 MMT:

- 60 MW of existing solar (Turquoise and Luning)
- 4 MW microgrid project to be added January 1, 2024;
- 10 MW BTM storage project to be added January 1, 2024;

- Paired 47 MW solar / 188 MWh storage project (scaled-down version of the proposed Luning Expansion) to be added January 1, 2024.
- **GHG Emissions Benchmark**

Because Liberty CalPeco is not located within CAISO, it calculated GHG emissions associated with its IRP portfolios using an hourly carbon intensity calculator that is similar to the Commission’s CSP calculator but that is derived from dispatch simulations of the NV Energy system in which Liberty CalPeco’s service territory is located. All of Liberty CalPeco’s Conforming Plans presented here achieve the following GHG Benchmarks emissions assigned to Liberty CalPeco on the “Benchmarks Net BTM CHP” tab of the CSP calculators posted on June 15, 2020, which are lower than the levels specified in the May 20, 2020 ALJ Ruling to account for the impacts of behind-the-meter CHP:

- 0.102 MMT CalPeco 2030 GHG Benchmark for the 46 MMT statewide target;
- 0.081 MMT CalPeco 2030 GHG Benchmark for the 38 MMT statewide target.

#### **a. Objectives**

Liberty CalPeco’s IRP seeks to develop and implement resource strategies that provide customers with the best balance of our primary resource planning objectives: reliability, environmental stewardship and reasonable cost:

- **Reliability.** The resource strategy must comply with all applicable reliability, resource adequacy and operational requirements placed on Liberty CalPeco under the NV Energy 2020 ESA and/or NV Energy OATT;
- **Environmental Stewardship.** At a minimum, the resource strategy must conform to the CPUC-assigned 2030 GHG Emissions targets for Liberty CalPeco under the 46 MMT and 38 MMT GHG Benchmarks, but are permitted to outperform those targets to align with the environmental preferences of Liberty CalPeco’s customers;

- **Reasonable Cost.** The resource strategy must satisfy all of the foregoing objectives at a reasonable cost commensurate with the benefits derived from the strategy.

Consistent with these overarching objectives, in this IRP Liberty CalPeco has pursued significant carbon reductions that can be realized while advancing an RPS strategy with bundled renewables (as opposed to utilizing only unbundled RECs as permitted under the RPS laws). The next section describes that approach.

## **b. Methodology**

### **i. Modeling Tool(s)**

In this section, Liberty CalPeco describes the modeling tools used to develop its IRP plans. Charles River Associates, International (“CRA”) was engaged to provide quantitative simulation modeling analysis and results to Liberty CalPeco that is comparable to the modeling performed by RESOLVE. These simulation modeling results were then post-processed to develop the data and results underlying this IRP filing.

Market and portfolio modeling were conducted in Aurora, a chronological production cost model licensed by Energy Exemplar, Inc. Aurora is an industry-standard tool that is widely used by utilities, system operators, and other market participants. CRA used the Aurora model to analyze the entire WECC region, producing forecasts of power price, carbon emissions, and capacity and generation by fuel type over time for the NV Energy system. CRA then used the Aurora model to perform an hourly, chronological dispatch of Liberty CalPeco’s portfolio, accounting for all variable costs of operation and economic purchases and sales with the NV Energy system to produce projections of asset level dispatch and the total variable costs associated with serving load.

## ii. Modeling Approach

In this section, Liberty CalPeco describes its overall approach to developing the IRP planning scenarios it evaluated, why each scenario was considered, and any post-processing calculations that were used to generate metrics for portfolio analysis.

The hourly dispatch simulation modeling results provided by CRA were then post-processed using Microsoft Excel to develop the specific Preferred Conforming Portfolios submitted by Liberty CalPeco in this IRP filing, using the following approach:

- The hourly impacts of new supply additions were adjusted to match the size of the resource additions specific to each scenario under consideration (to illustrate, if Liberty CalPeco wanted to model a 50 MW resource addition whereas CRA’s simulation model assumed a 100 MW resource addition, then the hourly results were adjusted downward by 50% to reflect the relative size of the resource addition in that scenario);
- The dispatch of Liberty CalPeco’s resources was adjusted to reflect the provisions of the 2021 NV Energy ESA that were not reflected in CRA’s dispatch simulation modeling results (e.g., hourly generation from new solar resources was modeled as curtailed in order to ensure that there were no hours when Liberty CalPeco’s total generation output exceeded its hourly system load to reflect transmission constraints);
- The hourly “Clean Net Short (CNS)” quantity was calculated (i.e., the MWh quantity required to be purchased under the 2021 NV Energy ESA in hours when CalPeco’s system load exceeded its hourly generation or storage output);
- The hourly GHG Emissions were calculated and aggregated up to annual values based on the hourly carbon intensity (lbs. per MWh) on the NV Energy system resulting from CRA’s dispatch simulation modeling analysis; and
- The size of new paired solar/storage resource additions were adjusted iteratively until the annual 2030 GHG emissions satisfied the CPUC-assigned conformance targets for Liberty CalPeco under the 47 MMT and 38 MMT benchmarks.

### III. Study Results

In this section, Liberty CalPeco provides the results of the analytic approach and results supporting the IRP plans describe above in Section 2: Study Design.

#### a. Conforming and Alternative Portfolios

Liberty CalPeco is submitting a total of three (3) Conforming Portfolios in this 2020 IRP submission, differentiated as follows (in all cases, shortfalls between the output of these resources and Liberty CalPeco’s system load requirements are assumed to be fulfilled by the 2021 NV Energy ESA during its term or from the bilateral power market after the agreement ends):

Portfolio Selection (a)	2020-2030 Resource Additions (MW)					Conformance with 2030 Standards					2030 Costs of GHG Reductions and RPS Increases				
	Solar (b)	Storage (c)	BTM Storage (d)	Microgrid (e)	Total (f)	2030 GHG Emissions (tonnes) (g)	46 MMT GHG Benchmark (h)	38 MMT GHG Benchmark (i)	RPS % vs. 60% Obligation (j)	Strategy to Meet 60% RPS Obligation (k)	2030 Generation Costs (2019\$ Millions) (l)	2030 GHG Emissions Reduction vs Current Baseline (tonnes) (m)	Cost per Tonne of GHG Reduction (n)=(l)/(m)	2030 RPS % Increase vs. Current Baseline (o)	Cost per % of RPS Increase (p)=(l)/(o)
Current Baseline	0	0	0	0	0	123,770	Does Not Conform	Does Not Conform	25.2%	Purchase RECs as Needed	\$42.3				
Portfolio A	60	60	10	4	134	84,158	Out-performs	Out-performs	44.4%	Purchase RECs as Needed	\$44.6	(39,612)	\$1,125.02	19.2%	\$232.56
Portfolio B	8	8	10	4	30	112,251	Conforms		29.2%	Purchase RECs as Needed	\$41.2	(11,519)	\$3,575.77	4.0%	\$1,027.25
Portfolio C	47	47	10	4	108	88,967		Conforms	41.9%	Purchase RECs as Needed	\$42.7	(34,803)	\$1,226.72	16.7%	\$256.34

#### b. Preferred Conforming Portfolios

- Preferred Conforming Portfolio A.

Portfolio A is an optional Conforming Portfolio that also is Liberty CalPeco’s Preferred Conforming Portfolio given that it represents Liberty CalPeco’s Base Plan and also outperforms both the 46 MMT and the 38 MMT statewide targets by producing a Liberty CalPeco 2030 GHG Benchmark of 0.074 MMT:

- 60 MW of existing solar (Turquoise and Luning)
- 4 MW microgrid project to be added January 1, 2024;

- 10 MW BTM storage project to be added January 1, 2024;
- Luning Expansion Project with paired 60 MW solar / 240 MWh storage components to be added January 1, 2024.

- **46 MMT Required Conforming Portfolio B.**

Portfolio B is a required Conforming Portfolio whose 2030 GHG Benchmark satisfies

Liberty CalPeco’s assigned share of the 46 MMT statewide target by producing a Liberty

CalPeco 2030 GHG Benchmark of 0.102 MMT:

- 60 MW of existing solar (Turquoise and Luning)
- 4 MW microgrid project to be added January 1, 2024;
- 10 MW BTM storage project to be added January 1, 2024;
- Paired 8 MW solar / 32 MWh storage project (scaled-down version of the proposed Luning Expansion) to be added January 1, 2024.

- **38 MMT Required Conforming Portfolio C.**

Portfolio C is a required Conforming Portfolio whose 2030 GHG Benchmark satisfies

Liberty CalPeco’s assigned share of the 38 MMT statewide target by producing a Liberty

CalPeco 2030 GHG Benchmark of 0.081 MMT:

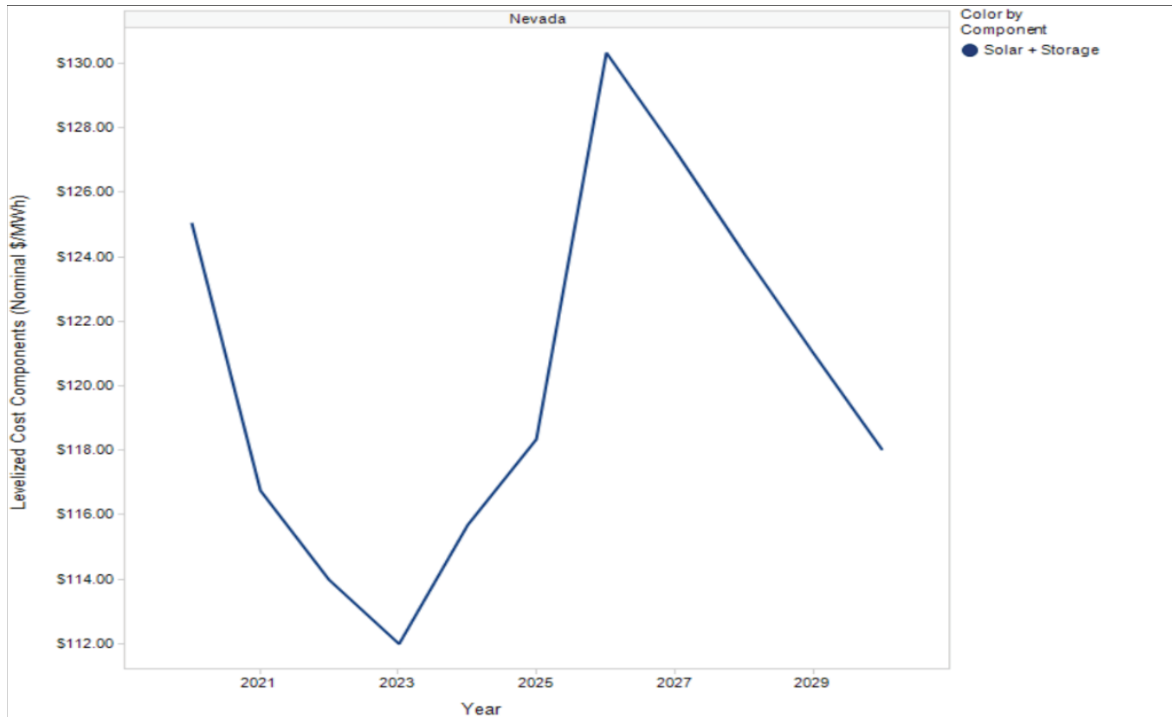
- 60 MW of existing solar (Turquoise and Luning)
- 4 MW microgrid project to be added January 1, 2024;
- 10 MW BTM storage project to be added January 1, 2024;
- Paired 47 MW solar / 188 MWh storage project (scaled-down version of the proposed Luning Expansion) to be added January 1, 2024.

All of Liberty CalPeco’s Preferred and Required Conforming Portfolios rely entirely on the addition of new solar and battery storage resources during the 2020-2030 planning horizon for a variety of reasons, including the following:

- Solar and storage resources, in various configurations, provide the least-cost, best-fit new resource options currently available to serve Liberty CalPeco’s customers;
- Solar and storage resources are the best resources to integrate quickly and easily into the NV Energy North System under the 2021 NV Energy ESA and/or the OATT;
- Resource availability and/or transmission capacity to delivery other forms of renewable or low-GHG resources to Liberty CalPeco’s service territory (e.g., wind, geothermal and hydro) are limited or non-existent at this time and therefore are not feasible for including in the IRP plans;
- Solar and storage resource additions are the least lumpy with the shortest lead times, and thus are the easiest to scale upward and downward providing flexibility to respond to future uncertainties in customer load requirements, policy changes and technological advances;
- If promptly authorized, solar and storage resources have the greatest ability to leverage the current Federal 30% ITC for the benefit of customers in the form of lower costs and rates. Forward curves from Wood Mackenzie reflect an increase in levelized cost of components of solar plus storage increasing after the years of 2023, after the 30% ITC expires.<sup>11</sup> As illustrated below, the 30% ITC results in lower costs if the resource is deployed now with the ITC benefit, rather than waiting longer for the market to result in decreased costs of components in 2030.

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<sup>11</sup> Wood Mackenzie – Power and Renewables Tool - Levelized Cost of Energy for Solar + Storage in Nevada – 2020 H2 Federal Carbon Case (subscription service).



The following table compares the mix of new resources in Liberty CalPeco’s Preferred and Required Conforming Plans to the mix of resources in the Reference System Portfolio (“RSP”). Given their emphasis on new solar and storage resources, the Liberty CalPeco IRP plans are highly consistent with the RSP, recognizing that the limited resource availability and transmission access to hydroelectric, geothermal and wind resources make those resource options infeasible for Liberty CalPeco to include in its plans at the present time.

**LIBERTY CALPECO PREFERRED CONFORMING PLAN (PLAN A)**

	Utility Solar	Battery Storage	BTM Storage *	Microgrid **	Total	Wind	Wind Out of State	Utility Solar	Battery Storage	Pumped Storage Hydro	DR	Natural Gas	Total
2020					-	0%	0%	0%	0%	0%	0%	0%	0%
2021					-	0%	0%	0%	0%	0%	0%	0%	0%
2022					-	0%	0%	0%	0%	0%	0%	0%	0%
2023					-	0%	0%	0%	0%	0%	0%	0%	0%
2024	60	60	10	4	134	0%	0%	48%	52%	0%	0%	0%	100%
2025	60	60	10	4	134	0%	0%	48%	52%	0%	0%	0%	100%
2026	60	60	10	4	134	0%	0%	48%	52%	0%	0%	0%	100%
2027	60	60	10	4	134	0%	0%	48%	52%	0%	0%	0%	100%
2028	60	60	10	4	134	0%	0%	48%	52%	0%	0%	0%	100%
2029	60	60	10	4	134	0%	0%	48%	52%	0%	0%	0%	100%
2030	60	60	10	4	134	0%	0%	48%	52%	0%	0%	0%	100%

\* BTM Storage included in Battery Storage Category  
 \*\* Microgrid included in Utility Solar Category

**CPUC REFERENCE SYSTEM PLAN (RSP) per D.20-03-028**

	Wind	Wind Out of State	Utility Solar	Battery Storage	Pumped Storage Hydro	DR	Natural Gas	Total	Wind	Wind Out of State	Utility Solar	Battery Storage	Pumped Storage Hydro	DR	Natural Gas	Total
2020	-	-	2,000	152	-	-	-	2,152	0%	0%	8%	1%	0%	0%	0%	9%
2021	34	-	4,000	2,453	-	222	-	6,709	0%	0%	16%	10%	0%	1%	0%	27%
2022	1,950	-	6,000	2,453	-	222	-	10,625	8%	0%	24%	10%	0%	1%	0%	43%
2023	1,950	-	8,000	2,453	-	222	-	12,625	8%	0%	33%	10%	0%	1%	0%	52%
2024	2,737	-	8,000	3,299	-	222	-	14,258	11%	0%	33%	13%	0%	1%	0%	58%
2025	2,737	-	8,000	3,299	-	222	-	14,258	11%	0%	33%	13%	0%	1%	0%	58%
2026	2,737	-	8,000	6,127	973	222	-	18,059	11%	0%	33%	25%	4%	1%	0%	74%
2027	2,737	-	8,000	6,127	973	222	-	18,059	11%	0%	33%	25%	4%	1%	0%	74%
2028	2,737	-	8,000	6,127	973	222	-	18,059	11%	0%	33%	25%	4%	1%	0%	74%
2029	2,737	-	8,000	6,127	973	222	-	18,059	11%	0%	33%	25%	4%	1%	0%	74%
2030	2,837	606	11,017	8,873	973	222	(30)	24,498	12%	2%	45%	36%	4%	1%	0%	100%

Liberty CalPeco’s Preferred Conforming Portfolio is Portfolio A, which includes the full Luning Expansion Project utilizing 60MW of incremental solar paired with 240Mwh of new battery storage. Liberty CalPeco prefers this portfolio over the two Required Conforming Portfolios for numerous reasons, including the facts that it:

- Best positions Liberty CalPeco to meet or exceed future, potentially more stringent, GHG reduction requirements because it outperforms the GHG Benchmarks associated with both the 46 MMT and 38 MMT statewide targets;
- Provides superior GHG reductions through 2030 because it produces the greatest displacement of energy and carbon emissions from system power purchased either under the 2021 NV Energy ESA or from the bilateral power market;
- Produces superior cost and rate benefits to Liberty CalPeco’s bundled customers by maximizing Liberty CalPeco’s ability to leverage available benefits of the Federal 30% ITC safe-harbor provisions in order to reduce the costs of building and operating new solar and storage resources for the benefit of customers (a fleeting opportunity);
- Improves Liberty CalPeco’s ability to accelerate the data by which it can significantly reduce and potentially end its dependence on power supplies from NV Energy and achieve its goal of 100% reliance on renewable and low-GHG resources to serve its customers.

Portfolio A: Base Plan (Luning Expansion of 60 MW Solar / 60 MW Storage plus 4 MW Microgrid and 10 MW BTM Storage in 2024 Preferred Conforming Portfolio Outperforms both CalPeco GHG Benchmarks for 46 MMT and 38 MMT Statewide IRP Targets)															IRP Emissions MMT
Portfolio Demand (MWh)	Turquoise Existing Solar (MWh)	Luning Existing Solar (MWh)	New Paired Solar (MWh)	New Paired Storage (MWh)	New Microgrid (MWh)	New BTM Storage (MWh)	Total Generation (MWh)	Hourly CNS Purchased from NVE (MWh)	Energy Purchase Costs (\$ Million)	PCC1 REC Purchase Costs (\$ Million)	GHG Allowance Purchase Costs (\$ Million)	Capacity Purchase Costs (\$ Million)	Emissions (tonnes)		
2020	577,378	28,249	147,097	-	-	-	175,347	402,032	\$ 12.07	\$ -	\$ 2.70	\$ 7.91	137,592	0.125	
2021	575,157	28,421	147,830	-	-	-	176,250	398,906	\$ 11.86	\$ 0.01	\$ 3.16	\$ 7.96	140,517	0.128	
2022	575,929	28,421	147,880	-	-	-	176,301	399,628	\$ 13.08	\$ 0.28	\$ 3.21	\$ 8.27	124,335	0.113	
2023	576,033	24,156	129,636	-	-	-	153,792	422,241	\$ 15.48	\$ -	\$ 3.60	\$ 8.34	121,399	0.110	
2024	576,823	25,140	124,660	120,317	(16,936)	9,512	(2,823)	259,870	\$ 10.52	\$ -	\$ 2.64	\$ 4.72	77,753	0.071	
2025	577,735	24,344	129,022	117,690	(17,101)	9,394	(2,850)	260,500	\$ 10.72	\$ 0.14	\$ 3.21	\$ 4.73	82,330	0.075	
2026	579,312	23,385	126,728	123,391	(17,597)	9,469	(2,933)	262,442	\$ 8.29	\$ 0.40	\$ 3.88	\$ 4.84	86,515	0.079	
2027	581,070	25,117	130,525	119,219	(17,738)	9,324	(2,956)	263,491	\$ 8.37	\$ 0.67	\$ 4.63	\$ 4.95	90,029	0.082	
2028	583,752	24,953	127,057	123,174	(17,753)	9,471	(2,959)	263,943	\$ 9.21	\$ 0.96	\$ 5.09	\$ 5.06	86,208	0.078	
2029	586,782	23,231	129,183	123,357	(17,816)	9,421	(2,969)	264,407	\$ 10.05	\$ 1.26	\$ 5.70	\$ 5.19	84,087	0.076	
2030	589,880	22,925	126,377	124,024	(17,869)	9,320	(2,978)	261,800	\$ 11.05	\$ 1.61	\$ 6.54	\$ 5.31	84,158	0.077	

Portfolio B: 8 MW Solar / 8 MW Storage plus 4 MW Microgrid and 10 MW BTM Storage in 2024 Required Conforming Plan for CalPeco 0.102 MMT GHG Benchmark (46 MMT Statewide IRP Target)															IRP Emissions MMT
Portfolio Demand (MWh)	Turquoise Existing Solar (MWh)	Luning Existing Solar (MWh)	New Paired Solar (MWh)	New Paired Storage (MWh)	New Microgrid (MWh)	New BTM Storage (MWh)	Total Generation (MWh)	Hourly CNS Purchased from NVE (MWh)	Energy Purchase Costs (\$ Million)	PCC1 REC Purchase Costs (\$ Million)	GHG Allowance Purchase Costs (\$ Million)	Capacity Purchase Costs (\$ Million)	Emissions (tonnes)		
2020	577,378	28,249	147,097	-	-	-	175,347	402,032	\$ 12.07	\$ -	\$ 2.70	\$ 7.91	137,592	0.125	
2021	575,157	28,421	147,830	-	-	-	176,250	398,906	\$ 11.86	\$ 0.01	\$ 3.16	\$ 7.96	140,517	0.128	
2022	575,929	28,421	147,880	-	-	-	176,301	399,628	\$ 13.08	\$ 0.28	\$ 3.21	\$ 8.27	124,335	0.113	
2023	576,033	24,156	129,636	-	-	-	153,792	422,241	\$ 15.48	\$ -	\$ 3.60	\$ 8.34	121,399	0.110	
2024	576,823	25,140	124,660	18,577	(2,258)	9,512	(2,823)	172,809	\$ 13.51	\$ 1.40	\$ 3.56	\$ 7.18	104,640	0.095	
2025	577,735	24,344	129,022	18,181	(2,280)	9,394	(2,850)	175,811	\$ 13.60	\$ 1.62	\$ 4.26	\$ 7.20	109,231	0.099	
2026	579,312	23,385	126,728	19,054	(2,346)	9,469	(2,933)	173,356	\$ 10.57	\$ 1.95	\$ 5.25	\$ 7.30	117,186	0.107	
2027	581,070	25,117	130,525	18,041	(2,365)	9,324	(2,956)	177,685	\$ 10.60	\$ 2.17	\$ 6.22	\$ 7.49	120,957	0.110	
2028	583,752	24,953	127,057	18,775	(2,367)	9,471	(2,959)	174,930	\$ 11.70	\$ 2.52	\$ 6.86	\$ 7.74	116,258	0.106	
2029	586,782	23,231	129,183	19,066	(2,375)	9,421	(2,969)	175,557	\$ 12.72	\$ 2.81	\$ 7.69	\$ 8.02	113,571	0.103	
2030	589,880	22,925	126,377	19,152	(2,382)	9,320	(2,978)	172,413	\$ 13.99	\$ 3.18	\$ 8.73	\$ 8.23	112,251	0.102	

Portfolio C: 47 MW Solar / 47 MW Storage plus 4 MW Microgrid and 10 MW BTM Storage in 2024 Required Conforming Plan for CalPeco 0.081 MMT GHG Benchmark (38 MMT Statewide IRP Target)															IRP Emissions MMT
Portfolio Demand (MWh)	Turquoise Existing Solar (MWh)	Luning Existing Solar (MWh)	New Paired Solar (MWh)	New Paired Storage (MWh)	New Microgrid (MWh)	New BTM Storage (MWh)	Total Generation (MWh)	Hourly CNS Purchased from NVE (MWh)	Energy Purchase Costs (\$ Million)	PCC1 REC Purchase Costs (\$ Million)	GHG Allowance Purchase Costs (\$ Million)	Capacity Purchase Costs (\$ Million)	Emissions (tonnes)		
2020	577,378	28,249	147,097	-	-	-	175,347	402,032	\$ 12.07	\$ -	\$ 2.70	\$ 7.91	137,592	0.125	
2021	575,157	28,421	147,830	-	-	-	176,250	398,906	\$ 11.86	\$ 0.01	\$ 3.16	\$ 7.96	140,517	0.128	
2022	575,929	28,421	147,880	-	-	-	176,301	399,628	\$ 13.08	\$ 0.28	\$ 3.21	\$ 8.27	124,335	0.113	
2023	576,033	24,156	129,636	-	-	-	153,792	422,241	\$ 15.48	\$ -	\$ 3.60	\$ 8.34	121,399	0.110	
2024	576,823	25,140	124,660	103,523	(13,267)	9,512	(2,823)	246,745	\$ 10.96	\$ 0.10	\$ 2.79	\$ 4.72	82,082	0.075	
2025	577,735	24,344	129,022	101,075	(13,396)	9,394	(2,850)	247,590	\$ 11.15	\$ 0.37	\$ 3.39	\$ 4.73	86,730	0.079	
2026	579,312	23,385	126,728	105,624	(13,785)	9,469	(2,933)	248,488	\$ 8.65	\$ 0.64	\$ 4.11	\$ 4.84	91,670	0.083	
2027	581,070	25,117	130,525	101,938	(13,894)	9,324	(2,956)	250,054	\$ 8.72	\$ 0.90	\$ 4.90	\$ 4.95	95,260	0.087	
2028	583,752	24,953	127,057	105,283	(13,906)	9,471	(2,959)	249,898	\$ 9.61	\$ 1.20	\$ 5.39	\$ 5.06	91,305	0.083	
2029	586,782	23,231	129,183	105,123	(13,956)	9,421	(2,969)	250,033	\$ 10.48	\$ 1.51	\$ 6.04	\$ 5.19	89,103	0.081	
2030	589,880	22,925	126,377	105,361	(13,997)	9,320	(2,978)	247,008	\$ 11.54	\$ 1.87	\$ 6.92	\$ 5.31	88,967	0.081	

**c. GHG Emissions Results**

Liberty CalPeco calculated GHG emissions associated with its IRP portfolios using an hourly carbon intensity calculator that is similar to the Commission’s CSP calculator but that is derived from dispatch simulations of the NV Energy system in which Liberty CalPeco’s service territory is located rather than the CAISO system. Liberty CalPeco’s Required Conforming Plans presented here achieve the following GHG Benchmarks emissions assigned to Liberty CalPeco on the “Benchmarks Net BTM CHP” tab of the CSP calculators posted on June 15,

2020, which are lower than the levels specified in the May 20, 2020 ALJ Ruling to account for the impacts of behind-the-meter CHP:

- 0.102 MMT CalPeco 2030 GHG Benchmark for the 46 MMT statewide target;
- 0.081 MMT CalPeco 2030 GHG Benchmark for the 38 MMT statewide target.

Additionally, Liberty CalPeco's Preferred Conforming Plan results in a 0.074 MMT CalPeco 2030 Benchmark, which provides superior carbon-reductions given that it outperforms both of the required GHG Benchmarks for the 46 MMT and 38 MMT statewide targets.

#### **d. Local Air Pollutant Minimization and Disadvantaged Communities**

##### **i. Local Air Pollutants**

With respect to local generation emissions, Liberty CalPeco's only contribution to air pollutants results from reliance on NV Energy system power where the majority of generating resources currently providing power are located inside Nevada. Liberty CalPeco's customers are particularly concerned with climate change and related environmental issues and, as described in greater detail below, Liberty CalPeco is working to exceed minimum renewable and GHG-free supply requirements to help address these concerns, which also will reduce reliance on system power.

Liberty CalPeco's King Beach diesel-fueled generating plant provides emergency reliability services only and thus on a forecast basis provides zero net generation and zero criteria air pollution. While this asset is not consistent with Liberty CalPeco goal of a supply portfolio with no GHG emissions, Liberty CalPeco is exploring technology options that may permit its replacement in the future, as long as the reliability benefits can be covered. Kings Beach, as an emergency use resource, provides important reliability benefits for specific contingency and

operational risks tied to potential severe winter weather conditions when supply lines (both transmission and distribution) experience temporary deratings or service interruptions.

## **ii. Focus on Disadvantaged Communities**

Liberty CalPeco's service territory is located on the eastern edge of California around the Lake Tahoe area.<sup>12</sup> Liberty CalPeco's service territory does not contain any Disadvantaged Communities ("DACs"), as defined in the Decision and the CalEnviroScreen tool. The majority of generating resources currently providing power to Liberty CalPeco are owned and controlled by other parties and are located inside Nevada, and thus do not have directly measurable local air pollution impacts on Liberty CalPeco's customers. CalPeco's only fossil-fueled supply resource—the Kings Beach diesel generator—is operated on an emergency-only basis and has zero projected generation output and zero projected GHG or local pollution emissions. Consequently, Liberty CalPeco has no further programs to minimize local air pollution associated with energy production, whether within or outside of DACs.

With respect to supporting DACs, Liberty CalPeco does have programs that seek to provide services and rate relief to its eligible customers.<sup>13</sup>

### ***A. Energy Savings Assistance Program ("ESA")***

ESA provides energy efficiency ("EE") upgrades to homes at no cost to Liberty CalPeco customers who are income qualified. Homes that receive these EE measures are described as either "weatherized" or "treated." A weatherized home receives only upgrades to insulation, weather stripping, caulking, low-flow showerheads, water heater blankets, and building envelope

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<sup>12</sup> See service territory at <https://california.libertyutilities.com/uploads/ServiceArea-1.pdf> and also CEC map at <https://data.cnra.ca.gov/dataset/energy-and-utility-service-areas/resource/97777704-80e9-4d78-aacf-5fa402c9b884>

<sup>13</sup> These programs are distinct from the COVID-19 programs adopted by the CPUC that are applicable to all IOUs.

repairs. A treated home receives weatherization, energy audits, energy education, appliance replacement, and energy efficient lighting, such as LEDs. The ESA measures provide energy cost savings to low-income customers, as well as improve quality of life with health, comfort, and safety benefits.

### ***B. California Alternate Rates for Energy (“CARE”)***

The CARE program offers a 20 percent discount to low-income primary residents in Liberty CalPeco’s service territory. The goal of the program is to reduce the cost of electric service to benefit the maximum number of eligible customers. Income eligibility for CARE and ESA customers requires a gross annual household income at or below 200 percent of the Federal Poverty Level. Qualifying customers complete a self-certifying application every two years. Applications are distributed through Liberty CalPeco’s North Lake Tahoe and South Lake Tahoe offices and through mailings and other outreach efforts.

### ***C. Medical Baseline Allowance***

This program benefits customers who use life support equipment and/or have illnesses that require additional heating and/or cooling needs. This program provides an increase in the allowance of electricity charged at the baseline (lowest) rate. The customer and the customer’s doctor must both complete an application to qualify.

### **e. Cost and Rate Analysis**

In this section Liberty CalPeco provides quantitative information to reflect how it anticipates that its Preferred Conforming Portfolios will affect costs and rates paid by its customers.

Liberty CalPeco’s IRP plans carefully consider the cost and rate impacts on its customers and the company seeks to develop and implement resource strategies that provide customers with

the best balance of our primary resource planning objectives: reliability, environmental stewardship and reasonable cost. An important tool for Liberty CalPeco is the utilization of the existing Federal ITC for the solar plus storage resource in the Luning Expansion Project. Because the storage is coupled with a “safe harbor” solar project, Liberty CalPeco’s customers can benefit from a substantial cost reduction that essentially accelerates the deployment of these technologies, as opposed to waiting for the market to reduce the technology cost over time. The illustration below shows how capturing the tax benefit now can help cost-effectively advance environmental stewardship at reasonable costs.

#### **f. System Reliability Analysis**

As discussed elsewhere in this IRP filing, Liberty CalPeco has constructed its IRP plans assuming it operates under the 2021 NV Energy ESA at least through its initial 5-year (less one day) term through the end of 2025, and then under similar provisions for 2026-2030, whether under an extended NV Energy ESA or as a wholesale transmission customer under the NV Energy OATT. In all circumstances, the IRP plans explicitly ensure that Liberty CalPeco contributes its fair share to system reliability and renewable integration on NV Energy’s North System because they reflect compliance with the resource adequacy and transmission operations requirements imposed by the 2021 NV Energy ESA.

Consistent with the provisions of the 2021 NV Energy ESA, Liberty CalPeco’s IRP plans use the assumptions for the Nameplate Capacity MW and the Electric Load Carrying Capability (“ELCC”) percentages of existing and proposed new resources as shown in the following tables. These table provides information comparable to the Nameplate Capacity MW data requested in the “System Reliability Progress Tracking Table” and the ELCC values that are required of LSEs filing the Resource Data Template that Liberty CalPeco is not required to file. While these

ELCC values are specific to the NV Energy system and are not directly comparable to the CPUC’s ELCC values provided in the Resource Data Template applicable to the CAISO system. However, the stated values substantiate that Liberty CalPeco’s IRP plans contribute its fair share to system reliability and renewable integration as determined by NV Energy carrying out its balancing area responsibilities under its OATT.

	<b>Nameplate Capacity (MW) by year</b>				
	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025-forward</b>
<b>Preferred Conforming Portfolio (Portfolio A with 60/240 Luning Expansion)</b>					
Existing Solar (MW)	60	60	60	60	60
New Paired Solar (MW)	0	0	0	60	60
New Paired Storage(MWh)	0	0	0	240	240
New Microgrid (MW)	0	0	0	4	4
New BTM Storage (MWh)	0	0	0	10	10
	<b>Effective Load Carrying Capacity (ELCC) % by year</b>				
	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025-forward</b>
<b>2021-2023 (Before Luning Expansion Project)</b>					
Existing Solar (Applied April to October)	33%	25%	25%	20%	20%
<b>2024-forward (After Luning Expansion Project)</b>					
Existing Solar (Applied April to October)	33%	25%	25%	15%	15%
New Solar plus Storage (Applied April to October)	0%	0%	0%	100%	100%

There are no capacity shortages in Liberty CalPeco’s IRP plans relative to its share of CAISO managed coincident peak demand, given that all of Liberty CalPeco’s loads, existing resources and currently planned resources are located in the NV Energy BAA’s North System and not within the CAISO-controlled grid. Moreover, as described above, Liberty CalPeco’s IRP portfolios explicitly model monthly capacity purchases required to satisfy fully its resource adequacy obligations within the NV Energy BAA under the 2021 NV Energy ESA and the NV Energy OATT.

**g. Hydro Generation Risk Management**

All of Liberty CalPeco's loads, existing resources and currently planned resources are located in the NV Energy BAA's North System; consequently, the risks of shortfalls in California hydroelectric generation due to drought conditions in California do not present meaningful risks to the adequacy and/or security of Liberty CalPeco's existing or planned power supply sources. Similarly, there is relatively limited existing or planned hydroelectric generation located within the NV Energy North System, none of which is dedicated to service Liberty CalPeco's loads, so the drought risks of Nevada hydroelectric generation to CalPeco's supply adequacy and security are limited as well. Consequently, Liberty CalPeco does not have any specific controls or strategies in place to manage such risks and its IRP portfolios do not differ based on any consideration or quantitative analysis of such risks.

**h. Long-Duration Storage Development**

All of Liberty CalPeco's loads, existing resources and currently planned resources are located in the NV Energy BAA's North System, where potential sites for pumped hydroelectric or other long duration storage are extremely limited. Moreover, under the 2021 NV Energy ESA, CalPeco is to limit its generation to the level of its loads, therefore given the current transmission limitations on imports, there is no clear path for delivering the output from long-duration storage. Consequently, Liberty CalPeco is not currently pursuing or intending to pursue activities to support development of long-duration storage but will continue to evaluate such opportunities when and if they arise.

**i. Out-of-State Wind Development**

As stated elsewhere in this IRP filing, because of the transmission limitations that current foreclose importation of energy, Liberty CalPeco will not explore higher capacity factor out-of-

state wind resources at this time. Should the Greenlink Nevada transmission development go forward, Liberty CalPeco will reassess such resources, most likely in the next IRP cycle. Since the Greenlink Nevada project was recently submitted on July 20, 2020 to the Public Utilities Commission of Nevada by NV Energy, Liberty CalPeco cannot currently speculate on the extent of any new transmission capacity or its timing.

**j. Transmission Development**

All of Liberty CalPeco’s loads, existing resources and currently planned resources are located in the NV Energy BAA’s North System, and thus are not anticipated to be impacted by, nor have any impacts on, the availability or cost of transmission transfer capability anywhere on the CAISO system. On that basis, Liberty CalPeco would conclude that there is no meaningful information from CalPeco’s IRP plans that need to be incorporated into a Resource Data Template. Moreover, Liberty CalPeco’s planning currently focuses on renewable resource and storage opportunities within or near its service territories that provide significant decarbonization benefits and value to customers, rather than any transmission development efforts outside the territory that may take a long period to develop and aid in serving loads.

As previously noted, NV Energy has proposed a significant expansion of transmission capabilities as part of their July 20, 2020 updated integrated resource plan. The “Greenlink Nevada” project is a multi-year, multi-phase, project that may yield significant improvements in Liberty CalPeco’s ability to import higher capacity renewables or low-carbon resources. NV Energy describes some of the goals of the project as follows:

Resource diversity and transmission infrastructure each play a key role in allowing NV Energy to achieve these state policy goals. While Nevada has abundant solar and geothermal resource potential, high quality wind and hydro resources are nearly absent within the state. Further, while battery technology continues to evolve, the zero-carbon analysis by E3 this filing demonstrates that

solar and PV energy storage alone cannot accomplish the aggressive renewable goals established for the state. A balance must be created between resource types and the availability of those resources as the sun rises and sets through each day.

The only way to gain access to diverse renewable resources is through an interconnected western grid. Nevada's geographic location provides the opportunity to be a key player in the development of that grid and a key renewable energy provider in the west. At this point, the missing piece is the lack of transmission infrastructure in Nevada. The transmission infrastructure proposed in the Greenlink Nevada plan builds a foundation for the state to access diverse resources and increase the transfer of energy between Nevada and the developing western grid. Several regional projects in the western grid are already under development and propose connections to or through the state of Nevada.<sup>14</sup>

While Liberty CalPeco is not a participant in this long-term transmission development, the company will closely monitor its development and adjust its long-term planning to the extent the capability of future imports becomes more foreseeable. Absent a material expansion of the NV Energy North System import and transmission capabilities, Liberty CalPeco anticipates being captive to NV Energy for a portion of its energy and capacity needs not met through the projects that Liberty CalPeco proposes to construct. At this time the company anticipates updating the Commission regarding the status of the Greenlink Nevada in a subsequent IRP cycle.

#### **IV. Action Plan**

In this section, Liberty CalPeco provides information and discussion to demonstrate to the Commission and stakeholders the feasibility of its resource planning strategy, barriers to its

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<sup>14</sup> NV Energy, *Northern and Southern Service Territory IRP 4<sup>th</sup> Amendment*, July 20, 2020, in PUCN Docket #20-07023, Volume 7, pages 4-5. Available at [http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS\\_2020\\_THRU\\_PRESENT/2020-7/3427.pdf](http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2020_THRU_PRESENT/2020-7/3427.pdf)

implementation and orders that the Commission should consider in order to facilitate implementation of the strategy.

**a. Proposed Activities**

To achieve Liberty CalPeco’s overall goals, the following activities will be initiated over the current planning cycle:

- **Evolution of Energy Management Approach**

Since the acquisition of CalPeco by Liberty Utilities from NV Energy in 2011, Liberty CalPeco has provided energy supply to its customers through a mix of the all-requirements 2016 NV Energy Service Agreement and a portfolio of utility-owned renewable solar generation resources. Under the 2016 NV Energy ESA, Liberty CalPeco was allowed to procure up to 60 MW of renewable energy for purposes of increasing the supply of low-cost, local, renewable energy, to meet the long-term requirements of Liberty CalPeco’s customers. The development and acquisition of the Luning and Turquoise solar generation projects fulfilled this goal and absorbed the full amount of development under that agreement. Now, under the terms of the pending 2021 NV Energy ESA, Liberty CalPeco can pursue additional resource and storage development, provided the output of those resources do not exceed the current loads.<sup>15</sup>

In the prior IRP, Liberty CalPeco intended to develop an integrated, 100% renewable resource portfolio that it could directly manage and dispatch. However, as previously described, NV Energy transmission limitations on imports from outside the BAA has altered that strategy until new import transmission becomes available. Under the terms of the new 2021 NV Energy ESA, Liberty CalPeco can pursue the solar plus storage Luning Expansion Project that will help the company exceed the GHG reduction goals and leverage the existing ITC tax benefits for

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<sup>15</sup> Cite to 2021 ESA development provisions.

customers, ultimately delivering cost-effective resources. Liberty CalPeco is currently exploring other resource and transmission access opportunities in the NV Energy BAA's North System, but no specific project candidates are ready for presentation now. Should such opportunities arise, Liberty CalPeco will present them to the Commission through the appropriate regulatory vehicle.

It is strategically important for Liberty CalPeco to take direct control of its portfolio and develop the low-carbon resources customers want while meeting its reliability, environmental stewardship, and reasonable cost objectives. The pending 2021 NV Energy ESA, which needs to be in place before year-end, plus the Luning Expansion Project and other projects described in the Preferred Conforming Plan, will further the company's goals to get to 100% renewables, consistent with the objectives of reliability, environmental stewardship, and reasonable cost. Furthermore, the BTM storage and microgrid projects can provide additional utility-controlled storage at strategic locations across the territory to further manage load under the 2021 NV Energy ESA.

- **Solicitations for Additional Renewable Generation and Energy Storage Resources**

Liberty CalPeco is initiating solicitations for the Luning Expansion Project and the local BTM storage and microgrid projects described in this IRP. Some of these projects mesh with Liberty CalPeco's wildfire mitigation efforts, particularly the BTM storage and microgrid projects insofar as they enhance local reliability issues under certain contingencies, include potential transmission derates by NV Energy during wildfire events. All the projects advance the California decarbonization goals. Should other resource development opportunities arise, Liberty CalPeco will evaluate them in a manner that is consistent with the Commission's overarching policies on decarbonization, safety, reliability, and affordability.

With respect to the BTM storage concept, Liberty CalPeco is anticipating undertaking two distinct paths. The first is a utility owned and controlled deployment of storage at disbursed, strategic customer sites that will enhance local reliability and provide a means for the utility to manage system demand under the 2021 NV Energy ESA for the benefit of all customers. The second step would be a pilot program to see the extent of a market response for aggregated, dispatchable storage resources that can be provided by third-parties. This bifurcation is important for Liberty CalPeco because it will allow for a relatively rapid deployment of some of the more strategically critical storage at points within the system that would be a resource for the utility to the benefit of all customers. The second portion would permit the company to see the extent that third parties can provide aggregated, dispatchable storage that will also enhance system resiliency and the company's integration of larger renewables projects outside the territory.

The microgrid projects would also provide similar benefits in terms of resiliency and incremental local capacity. These projects would similarly be located at strategically important locations within the system and help enhance reliability during system contingencies during the peak winter load periods. Liberty CalPeco would like Commission authorization to pursue development of these projects and will present them via separate applications.

#### **b. Procurement Activities**

Although Liberty CalPeco has broader plans to issue competitive solicitations in the future to secure utility owned facilities, at this time, Liberty CalPeco's only specific solicitation plans involve a planned solicitation this year for its proposed expansion of the Luning Expansion Project. As described above, the proposed Luning Expansion Project would add approximately

60 MW of solar and 240MWh of storage in a hybrid configuration.<sup>16</sup> Liberty CalPeco is still finalizing the details of its planned solicitation but intends to move forward expeditiously in order to maximize customer benefits associated with lower cost resources due to the current Federal ITC opportunity. Any delay to the solicitation could result in a lost opportunity as the tax benefits step down over time.

**c. Potential Barriers**

As previously noted, Liberty CalPeco faces certain transmission constraints within the NV Energy balancing authority area which limit its options for contracting with resources located outside that area. Liberty CalPeco's primary plans to undertake additional renewable procurement in the near term include securing Commission approval of its 2021 NV Energy ESA, the proposed expansion of the Luning Solar Project, and potentially other opportunities to be evaluated for renewables development or transmission access. The 2021 NVE Energy ESA contemplates the Luning Expansion Project and other development described in the Preferred Conforming Portfolio, and also utilizes operational renewable projects that are already providing output to Liberty CalPeco under the 2016 NV Energy Services Agreement. With respect to the Luning Expansion Project and any solar PV projects, these will utilize proven solar PV and storage technologies. Given the favorable tax treatment the ITC provides, the Luning Expansion Project will provide particularly attractive customer benefits. The primary barriers for these projects involve transmission constraints and Commission approval, as described in greater detail below. Nonetheless, at this time Liberty CalPeco expects that its continued status as a wholesale

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<sup>16</sup> Hybrid configuration is necessary for ITC eligibility for an initial period. Once that period ends, Liberty CalPeco will explore whether there are advantages to having the storage facility operate in a different configuration.

customer of NV Energy will continue until such time as regional transmission access improves in the NV Energy North System, or CalPeco develops sufficient resources to lessen that need over time.

Liberty CalPeco identifies the following key barriers to its long-term plan for meeting customer and regulatory expectations:

- **Transmission System**

The NV Energy transmission system presents the most significant barrier to Liberty CalPeco's goal of a 100% renewables portfolio. This system has extremely limited available transmission capacity between the NVE BAA and California and other bordering states that have high capacity value renewables. In addition, transmission capacity is limited from southern Nevada to the Liberty CalPeco service territory, essentially foreclosing the import of any excess generation out of California's market. The key to future success for Liberty CalPeco's long-term resource plan is identification of local generation within the NVE BAA that may not trigger the need for extensive and costly system upgrades required for the reliable interconnection of new renewable resources. When Liberty CalPeco undertakes its solicitations, it expects that the costs associated with any transmission or other upgrades will be an important factor in resource selection. Should, however, NV Energy's Greenlink Nevada project open up new opportunities to access renewable or low-carbon resources outside of the NV Energy BAA, Liberty CalPeco will assess those opportunities. At this time, however, the timing of that project is very speculative. Liberty CalPeco will update the CPUC regarding this barrier in a subsequent IRP cycle or earlier should conditions warrant.

- **Emissions Intensity of NV Energy Generation Portfolio**

Liberty CalPeco has historically relied on provision of energy and capacity from the NV Energy generation portfolio. While Liberty CalPeco has made progress in increasing its

commitment of non-emitting GHG renewable energy for its customers, the underlying generation portfolio in Nevada is different from the California generation resources. Nonetheless, the 2021 NV Energy ESA excludes coal resources, and NV Energy is undertaking additional renewable development itself consistent with Nevada law, so over time the higher GHG intensity of the NV Energy portfolio will decline. Liberty CalPeco's overarching goal of 100% renewables will, over time, reduce reliance on NV Energy for supplies, but continue as a transmission customer and wholesale customer for residual energy and capacity requirements.

- **Illiquid Bilateral Energy Market**

The NVE BAA is dominated by the vertically integrated utility, NV Energy. As such, generation and load in this market are managed through bilateral contracts between market participants, delivered under point-to-point transmission service or network integration service. Key to the success of Liberty CalPeco's forward-looking plan is the ability to have greater control over its generation and storage consistent with the 2021 NV Energy ESA to meet the Liberty CalPeco load shape. So, rather than simply focusing on maximizing renewable MWh production, the company is looking at leveraging renewables and storage together to better match loads to meet GHG goals and enhance in-territory benefits for all customers.

- **Regulatory Disconnect Between California and Nevada**

As a California IOU, Liberty CalPeco is obligated to meet all California climate change and renewable portfolio standards. While the State of Nevada has its own renewable portfolio standards, these requirements are significantly lower than those of California. In addition, Nevada is not subject to material climate change regulation. To the extent that Liberty CalPeco is relying on Nevada-based generation resources to provide service to its customers, it will be challenging for Liberty CalPeco to meet California regulatory requirements in the future because the native Nevada market is not seeking to secure the same level of green resources.

Nonetheless, to the extent there are any challenges in meeting the RPS targets over the planning horizon, the existing RPS laws permit Liberty CalPeco to utilize unbundled RECs for compliance purposes, which is distinct from the favorable GHG emissions levels associated with the proposed Preferred Conforming Plan.

- **Regulatory Approval for Long Term Solicitations, Schedule for Declining Tax Credits, and Accelerated Depreciation**

In its assessment of resource options, Liberty CalPeco has considered technologies such as solar, wind, and battery storage to supply customers from low cost renewable, non-GHG emitting energy sources. The timing for project's regulatory approval plays a significant role in the economics of these projects, given the declining schedule for both the ITC, PTC, and rules regarding the use of accelerated depreciation. If regulatory approvals are delayed, the current 30% ITC safe harbor could be lost, and the lower the available tax credits will inflate the resulting levelized cost of energy for these projects, and the higher the energy costs for customers. Because Liberty CalPeco does not fit in the larger CPUC's IRP modeling structure as it is outside of CAISO, the company suggested that its IRP be contemplated separately from the CAISO-based load serving entities to minimize the regulatory lag associated with the extensive modeling for CAISO-based entities.

**d. Commission Direction or Actions**

As previously noted, Liberty CalPeco will be submitting to the CPUC the new 2021 NV Energy ESA, which needs to be made effective via regulatory approval in early December 2020. Once that agreement is in place, Liberty CalPeco can quickly advance the Luning Expansion Project, and the in-territory microgrids and BTM storage projects from the Preferred Conforming Plan.

Because Liberty CalPeco has used term arrangements in the past, the Commission has not provided any standing authority to enter into short-term arrangements with suppliers. Liberty CalPeco would like to secure from the Commission the authority to pursue supply on an expedited basis via Advice Letters where time is of the essence in securing the ITC benefits, rather than seeking pre-approval of solicitation and contract details. Given the short timeframe before the ITC step-down occurs, and the benefits that can flow to customers, the company believes that prompt action to secure renewables plus storage should be encouraged.

Liberty CalPeco would also ask that the Commission authorize it to move forward on the types of projects articulated in the Preferred Conforming Plan, including the microgrid and BTM storage projects, ahead of decisions regarding the CAISO-based LSEs. Since Liberty CalPeco is not part of the CAISO, the modeling work that will occur using aggregated resource plans is not applicable to Liberty CalPeco. Rather than experiencing a significant regulatory lag associated with the work for the CAISO-based LSEs, the company believes that the Commission can review the IRP as proposed here and authorize the company to pursue them expeditiously.

**e. Diablo Canyon Power Plant Replacement**

Because it is outside of the CAISO BAA, Liberty CalPeco's operations and resource procurement do not directly impact the CAISO resource adequacy situation, and accordingly Liberty CalPeco's IRP plans do not explicitly address nor offer any explicit assistance in replacing Diablo Canyon capacity. However, all of the resources that are proposed to be added in Liberty CalPeco's IRP plans (paired solar plus storage, behind-the-meter storage and microgrids) themselves contribute firm, flexible and GHG-free resources to its utility territory within the NV Energy BAA that is located within California. In the case of the microgrid and BTM storage projects, the intent behind that effort is to both advance the type of resiliency

benefits associated with its Wildfire Mitigation Plans as well as enhancing reliability during extreme winter weather events. An additional benefit from the storage aspects of these proposals will be the enhanced management of the demand charges under the 2021 NV Energy ESA and the larger renewable projects' intermittent output.

## **V. Lessons Learned**

Liberty CalPeco suggests that its circumstances are different enough from other CPUC-jurisdictional, CAISO-based LSEs that it should have its IRP and the procurement plan processed and approved in an expeditious manner, ahead of any Commission consolidated plan assessment for those LSEs that operate within CAISO. Liberty CalPeco's procurement goals include high levels of renewable and low-GHG power supplies, so it is advancing the State's decarbonization efforts on a path faster than if it were simply meeting RPS compliance. Because it is outside of the CAISO BAA, Liberty CalPeco's procurement does not need to address various RA product types. Accordingly, from Liberty CalPeco's perspective, it would benefit customers to have this proposed procurement approach carved out of any longer lead-time proceedings occurring in the IRP docket and for the Commission to authorize this pursuit of an expedited, high renewables procurement as soon as practicable.

**CONFIDENTIAL MATERIALS**

**EXHIBIT 1  
COST AND RATE TABLES FOR IRP PLANS**

**BASELINE / CURRENT:**

Line No.	Cost Category	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Distribution					\$ 77	\$ 81	\$ 83	\$ 84	\$ 86	\$ 87	\$ 88
2	Transmission					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3	Generation					\$ 40	\$ 40	\$ 38	\$ 38	\$ 40	\$ 41	\$ 42
4	Demand Side Programs					\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1
5	Other					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6 (sum lines 1-5)	Baseline Revenue Requirement					\$ 118	\$ 122	\$ 122	\$ 123	\$ 126	\$ 128	\$ 131
7	System Sales (GWh)					577	578	579	581	584	587	590
8	Bundled Sales (GWh)					577	578	579	581	584	587	590
9	System Average Delivery Rate (¢/kWh)					13.42	14.17	14.44	14.57	14.86	14.95	14.96
10	Bundled Generation Rate (¢/kWh)					7.00	6.99	6.55	6.60	6.78	6.95	7.17
11	System Average Bundled Rate (¢/kWh)					20.42	21.15	21.00	21.17	21.64	21.90	22.13

**PORTFOLIO A - Lining Expansion 60/60/240**

Line No.	Cost Category	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Distribution					\$ 79	\$ 83	\$ 85	\$ 86	\$ 88	\$ 89	\$ 89
2	Transmission					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3	Generation					\$ 46	\$ 46	\$ 43	\$ 43	\$ 44	\$ 44	\$ 45
4	Demand Side Programs					\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1
5	Other					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6 (sum lines 1-5)	Baseline Revenue Requirement					\$ 126	\$ 130	\$ 129	\$ 130	\$ 132	\$ 134	\$ 135
7	System Sales (GWh)					577	578	579	581	584	587	590
8	Bundled Sales (GWh)					577	578	579	581	584	587	590
9	System Average Delivery Rate (¢/kWh)					13.83	14.57	14.82	14.94	15.21	15.28	15.27
10	Bundled Generation Rate (¢/kWh)					8.00	7.95	7.50	7.45	7.45	7.48	7.55
11	System Average Bundled Rate (¢/kWh)					21.83	22.52	22.32	22.38	22.66	22.75	22.83

**CONFIDENTIAL MATERIALS**

**PORTFOLIO B - 46 MMT Conforming**

Line No.	Cost Category	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Distribution					\$ 79	\$ 83	\$ 85	\$ 86	\$ 88	\$ 89	\$ 89
2	Transmission					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3	Generation					\$ 40	\$ 40	\$ 37	\$ 38	\$ 39	\$ 40	\$ 41
4	Demand Side Programs					\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1
5	Other					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6 (sum lines 1-5)	Baseline Revenue Requirement					\$ 120	\$ 124	\$ 123	\$ 124	\$ 128	\$ 129	\$ 131
7	System Sales (GWh)					\$ 577	\$ 578	\$ 579	\$ 581	\$ 584	\$ 587	\$ 590
8	Bundled Sales (GWh)					\$ 577	\$ 578	\$ 579	\$ 581	\$ 584	\$ 587	\$ 590
9	System Average Delivery Rate (¢/kWh)					13.83	14.57	14.82	14.94	15.21	15.28	15.27
10	Bundled Generation Rate (¢/kWh)					6.91	6.89	6.46	6.49	6.64	6.79	6.98
11	System Average Bundled Rate (¢/kWh)					20.74	21.46	21.29	21.42	21.84	22.06	22.26

**PORTFOLIO C - 38 MMT Conforming**

Line No.	Cost Category	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Distribution					\$ 79	\$ 83	\$ 85	\$ 86	\$ 88	\$ 89	\$ 89
2	Transmission					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3	Generation					\$ 43	\$ 43	\$ 41	\$ 41	\$ 41	\$ 42	\$ 43
4	Demand Side Programs					\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1
5	Other					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6 (sum lines 1-5)	Baseline Revenue Requirement					\$ 123	\$ 128	\$ 127	\$ 128	\$ 130	\$ 131	\$ 133
7	System Sales (GWh)					\$ 577	\$ 578	\$ 579	\$ 581	\$ 584	\$ 587	\$ 590
8	Bundled Sales (GWh)					\$ 577	\$ 578	\$ 579	\$ 581	\$ 584	\$ 587	\$ 590
9	System Average Delivery Rate (¢/kWh)					13.83	14.57	14.82	14.94	15.21	15.28	15.27
10	Bundled Generation Rate (¢/kWh)					7.53	7.51	7.08	7.04	7.08	7.13	7.24
11	System Average Bundled Rate (¢/kWh)					21.36	22.08	21.90	21.98	22.29	22.41	22.51

End of Exhibit

## **Glossary of Terms**

**Alternative Portfolio:** LSEs are permitted to submit “Alternative Portfolios” developed from scenarios using different assumptions from those used in the Reference System Plan. Any deviations from the “Conforming Portfolio” must be explained and justified.

**Approve (Plan):** the CPUC’s obligation to approve an LSE’s integrated resource plan derives from Public Utilities Code Section 454.52(b)(2) and the procurement planning process described in Public Utilities Code Section 454.5, in addition to the CPUC obligation to ensure safe and reliable service at just and reasonable rates under Public Utilities Code Section 451.

**Balancing Authority Area (CAISO):** the collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area.

**Baseline resources:** Those resources assumed to be fixed as a capacity expansion model input, as opposed to Candidate resources, which are selected by the model and are incremental to the Baseline. Baseline resources are existing (already online) or owned or contracted to come online within the planning horizon. Existing resources with announced retirements are excluded from the Baseline for the applicable years. Being “contracted” refers to a resource holding signed contract/s with an LSE/s for much of its energy and capacity, as applicable, for a significant portion of its useful life. The contracts refer to those approved by the CPUC and/or the LSE’s governing board, as applicable. These criteria indicate the resource is relatively certain to come online. Baseline resources that are not online at the time of modeling may have a failure rate applied to their nameplate capacity to allow for the risk of them failing to come online.

**Candidate resource:** those resources, such as renewables, energy storage, natural gas generation, and demand response, available for selection in IRP capacity expansion modeling, incremental to the Baseline resources.

**Capacity Expansion Model:** a capacity expansion model is a computer model that simulates generation and transmission investment to meet forecast electric load over many years, usually with the objective of minimizing the total cost of owning and operating the electrical system. Capacity expansion models can also be configured to only allow solutions that meet specific requirements, such as providing a minimum amount of capacity to ensure the reliability of the system or maintaining greenhouse gas emissions below an established level.

**Certify (a Community Choice Aggregator Plan):** Public Utilities Code 454.52(b)(3) requires the CPUC to certify the integrated resource plans of CCAs. “Certify” requires a formal act of the Commission to determine that the CCA’s Plan complies with the requirements of the statute and the process established via Public Utilities Code 454.51(a). In addition, the Commission must review the CCA Plans to determine any potential impacts on public utility bundled customers under Public Utilities Code Sections 451 and 454, among others.

**Clean System Power (CSP, formerly “Clean Net Short”) methodology:** the methodology used to estimate GHG emissions associated with an LSE’s Portfolio based on how the LSE will expect to rely on system power on an hourly basis.

**Community Choice Aggregator:** a governmental entity formed by a city or county to procure electricity for its residents, businesses, and municipal facilities.

**Conforming Portfolio:** the LSE portfolio that conforms to IRP Planning Standards, the 2030 LSE-specific GHG Emissions Benchmark, use of the LSE's assigned load forecast, use of inputs and assumptions matching those used in developing the Reference System Portfolio, as well as other IRP requirements including the filing of a complete Narrative Template, a Resource Data Template and Clean System Power Calculator.

**Effective Load Carrying Capacity:** a percentage that expresses how well a resource is able avoid loss-of-load events (considering availability and use limitations). The percentage is relative to a reference resource, for example a resource that is always available with no use limitations. It is calculated via probabilistic reliability modeling, and yields a single percentage value for a given resource or grouping of resources.

**Electric Service Provider:** an entity that offers electric service to a retail or end-use customer, but which does not fall within the definition of an electrical corporation under Public Utilities Code Section 218.

**Filing Entity:** an entity required by statute to file an integrated resource plan with CPUC.

**Future:** a set of assumptions about future conditions, such as load or gas prices.

**GHG Benchmark (or LSE-specific 2030 GHG Benchmark):** the mass-based GHG emission planning targets calculated by staff for each LSE based on the methodology established by the California Air Resources Board and required for use in LSE Portfolio development in IRP.

**GHG Planning Price:** the systemwide marginal GHG abatement cost associated with achieving a specific electric sector 2030 GHG planning target.

**Integrated Resources Planning Standards (Planning Standards):** the set of CPUC IRP rules, guidelines, formulas and metrics that LSEs must include in their LSE Plans.

**Integrated Resource Planning (IRP) process:** integrated resource planning process; the repeating cycle through which integrated resource plans are prepared, submitted, and reviewed by the CPUC

**Long term:** more than 5 years unless otherwise specified.

**Load Serving Entity:** an electrical corporation, electric service provider, community choice aggregator, or electric cooperative.

**Load Serving Entity (LSE) Plan:** an LSE's integrated resource plan; the full set of documents and information submitted by an LSE to the CPUC as part of the IRP process.

**Load Serving Entity (LSE) Portfolio:** a set of supply- and/or demand-side resources with certain attributes that together serve the LSE's assigned load over the IRP planning horizon.

**Loss of Load Expectation (LOLE):** a metric that quantifies the expected frequency of loss-of-load events per year. Loss-of-load is any instance where available generating capacity is insufficient to serve electric demand. If one or more instances of loss-of-load occurring within the same day regardless of duration are counted as one loss-of-load event, then the LOLE metric can be compared to a reference point such as the industry probabilistic reliability standard of "one expected day in 10 years," i.e. an LOLE of 0.1.

**Net Qualifying Capacity:** *Qualifying Capacity reduced, as applicable, based on: (1) testing and verification; (2) application of performance criteria; and (3) deliverability restrictions. The Net Qualifying Capacity determination shall be made by the California ISO pursuant to the provisions of this California ISO Tariff and the applicable Business Practice Manual.*

**Non-modeled costs:** *embedded fixed costs in today's energy system (e.g., existing distribution revenue requirement, existing transmission revenue requirement, and energy efficiency program cost).*

**Nonstandard LSE Plan:** *type of integrated resource plan that an LSE may be eligible to file if it serves load outside the CAISO balancing authority area.*

**Optimization:** *an exercise undertaken in the CPUC's Integrated Resource Planning (IRP) process using a capacity expansion model to identify a least-cost portfolio of electricity resources for meeting specific policy constraints, such as GHG reduction or RPS targets, while maintaining reliability given a set of assumptions about the future. Optimization in IRP considers resources assumed to be online over the planning horizon (baseline resources), some of which the model may choose not to retain, and additional resources (candidate resources) that the model is able to select to meet future grid needs.*

**Planned resource:** *any resource included in an LSE portfolio, whether already online or not, that is yet to be procured. Relating this to capacity expansion modeling terms, planned resources can be baseline resources (needing contract renewal, or currently owned/contracted by another LSE), candidate resources, or possibly resources that were not considered by the modeling, e.g., due to the passage of time between the modeling taking place and LSEs developing their plans. Planned resources can be specific (e.g., with a CAISO ID) or generic, with only the type, size and some geographic information identified.*

**Qualifying capacity:** *the maximum amount of Resource Adequacy Benefits a generating facility could provide before an assessment of its net qualifying capacity.*

**Preferred Conforming Portfolio:** *the conforming portfolio preferred by an LSE as the most suitable to its own needs; submitted to CPUC for review as one element of the LSE's overall IRP plan.*

**Preferred System Plan:** *the Commission's integrated resource plan composed of both the aggregation of LSE portfolios (i.e., Preferred System Portfolio) and the set of actions necessary to implement that portfolio (i.e., Preferred System Action Plan).*

**Preferred System Portfolio:** *the combined portfolios of individual LSEs within the CAISO, aggregated, reviewed and possibly modified by Commission staff as a proposal to the Commission, and adopted by the Commission as most responsive to statutory requirements per Pub. Util. Code 454.51; part of the Preferred System Plan.*

**Reference System Plan:** *the Commission's integrated resource plan that includes an optimal portfolio (Reference System Portfolio) of resources for serving load in the CAISO balancing authority area and meeting multiple state goals, including meeting GHG reduction and reliability targets at least cost.*

**Reference System Portfolio:** *the multi-LSE portfolio identified by staff for Commission review and adopted/modified by the Commission as most responsive to statutory requirements per Pub. Util. Code 454.51; part of the Reference System Plan.*

**Short term:** *1 to 3 years (unless otherwise specified).*

**Staff:** *CPUC Energy Division staff (unless otherwise specified).*

**Standard LSE Plan:** type of integrated resource plan that an LSE is required to file if it serves load within the CAISO balancing authority area (unless the LSE demonstrates exemption from the IRP process).