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In accordance with NRS Chapter 719,
this filing has been electronically signed and filed
by: /s Erin Moore

By electronically filing the document(s),
the filer attests to the authenticity of the electronic signature(s) contained therein.

This filing has been electronically filed and deemed to be signed by an authorized
agent or
representative of the signer(s) and
SPPC



FILED WITH THE PUBLIC UTILITIES COMMISSION OF NEVADA - 6/7/2024

June 7, 2024

Ms. Trisha Osborne
Assistant Commission Secretary
Public Utilities Commission of Nevada
1150 East William Street
Carson City, Nevada 89701-3109

RE: Docket No. 24-06____ Application of Sierra Pacific Power Company d/b/a NV Energy for Approval of an Energy Supply Agreement with Callisto Enterprises, LLC

Dear Ms. Osborne:

Enclosed for filing please find Sierra Pacific Power Company d/b/a NV Energy's (the "Company") and Callisto Enterprises, LLC's ("Callisto") Joint Application for approval of an energy supply agreement ("ESA") between the Company and Callisto pursuant to the Clean Transition Tariff pending approval in Docket No. 24-05023. Consistent with NAC § 703.535, the filing is made up of this Application, the ESA, a draft notice, testimony of Company witnesses Janet Wells and Hank Will and Callisto witnesses Briana Kobor and Carolyn Berry.

Portions of the filing accompanying this transmittal letter are to be kept under seal pursuant to NAC § 703.527 *et seq.* This information is contained in a sealed envelope, appropriately marked, and contains the unredacted pages from of the ESA, testimony of Janet Wells, testimony of Hank Will and certain workpapers supporting the testimony of Hank Will, which includes confidential customer-specific information as well as confidential commercially sensitive and/or trade secret information of the Company that derives independent economic value from not being generally known. This information is not known outside the Company and its distribution is limited within the Company. Publication of this information would also unfairly advantage competing suppliers and impair the Company's ability to achieve the most favorable pricing and terms and conditions from suppliers on behalf of its customers. The Company and Callisto requests that this confidential information remain under seal for a period of at least five years following the expiration or earlier termination of the attached energy supply agreement.

Should you have any questions regarding this filing, please contact me at (775) 834-5696 or deborah.bone@nvenergy.com.

Respectfully submitted,

/s/Deborah Bone

Deborah Bone
Deputy General Counsel

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BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

Joint Application of Sierra Pacific Power Company)
d/b/a NV Energy and Callisto Enterprises, LLC for) Docket No. 24-06___
Approval of an Energy Supply Agreement /

**JOINT APPLICATION OF SIERRA PACIFIC POWER COMPANY D/B/A NV
ENERGY AND CALLISTO ENTERPRISES, LLC FOR APPROVAL OF AN ENERGY
SUPPLY AGREEMENT**

Sierra Power Company, d/b/a NV Energy (“Sierra” or “Company”) and Callisto Enterprises, LLC (“Google” or “Customer” and together with Sierra “Joint Applicants”), hereby makes this Application pursuant to Nevada Administrative Code (“NAC”) NAC § 703.535 for approval of an energy supply agreement (“ESA”) between Sierra and Google for purposes of providing electric service to Customer’s data center facilities, located in Storey County, Nevada (the “Facilities”). The ESA will provide a mechanism that allows Google’s facilities to take service under the Clean Transition tariff (“CTT”) that is pending approval in Docket No. 24-05023. The Joint Applicants seek approval of a long-term energy supply period within the ESA to meet Customer’s corporate goals regarding carbon-free energy (“CFE”) supply on an hourly load matching basis, which requires access to dedicated clean generation sources to supply its Facilities in a manner that complies with the CTT requirements and does not result in any increased costs or forgone benefits for non-participating customers.

I.

THE APPLICANTS

SIERRA PACIFIC POWER COMPANY

Sierra is a Nevada corporation and wholly-owned subsidiary of NV Energy, Inc., a Nevada corporation, an exempt utility holding company. Sierra is engaged in providing electric service to the public in portions of Washoe, Pershing, Humboldt, Lander, Elko, Mineral, Churchill, Nye, Esmeralda, Douglas, Storey, and Lyon counties, Nevada, pursuant to a

1 certificate of public convenience and necessity issued by this Commission. Sierra is a “public
2 utility” as that term is defined and used pursuant to Chapter 704 of the NRS.

3 Sierra’s primary business office is located at 6100 Neil Road, Reno, Nevada. All
4 correspondence related to this Application should be transmitted to Sierra’s counsel and to
5 Sierra’s Manager of Regulatory Services, as set forth below:

6 Deborah Bone
7 Deputy General Counsel
8 6100 Neil Road
9 Reno, NV 89511
775-834-5696
deborah.bone@nvenergy.com

Sandra Blain
Director, Regulatory Services
6100 Neil Road
Reno, NV 89511
775-834-5823
regulatory@nvenergy.com

11 CALLISTO ENTERPRISES LLC

12 Callisto Enterprises is a subsidiary of Google LLC, which is a subsidiary of Alphabet
13 Inc. Google owns and operates two data centers in Nevada, one in Storey County, and one in
14 Clark County. All correspondence related to this Application should be transmitted to
15 Google’s counsel and to Briana Kobor, Head of Energy Market Innovation for Google, as set
16 forth below:

17 Justina Caviglia, Esq.
18 Parsons Behle & Latimer
19 50 W. Liberty Street, Suite 750
20 Reno, NV 89502
775-323-1601
jcaviglia@parsonsbehle.com

Briana Kobor
Head of Energy Market Innovation
Google
1021 S 400 W
Salt Lake City, UT 84101
bkobor@google.com

22 II.

23 OVERVIEW

24 The ESA provides Google with a vehicle to receive electric service under the CTT. The
25 term of Google’s long-term ESA is expected to commence once the dedicated renewable energy
26 resource, the Corsac Station Enhanced Geothermal Project in development by Fervo Energy,
27

1 reaches commercial operation.¹ Non-participating customers of the utility will not experience
2 increased costs for electric service or forgo the benefit of a reduction of costs for electric service.
3 Prior to commercial operation of the underlying geothermal project, Google will be served at its
4 otherwise applicable rate.

5 Additional information regarding the ESA is included in the attached testimony of
6 Company witnesses Janet Wells and Hank Will and Customer witnesses Briana Kobor and
7 Carolyn Berry.

8
9 **III.**

10 **THE FILING**

11 Consistent with NAC § 703.535, the filing is made up of the transmittal letter, this
12 Application, the ESA, the ESA pricing model, a draft notice, testimony of Janet Wells, Hank
13 Will, Briana Kobor and Carolyn Berry.

14 **The ESA (Exhibit A).** The ESA provides a means for Google to purchase and receive
15 electric service using clean energy resources, while not shifting costs to other customer classes.

16 **Draft Notice (Exhibit B).** Accompanying this filing is a Draft Notice satisfying the
17 requirements of NAC § 703.162.

18 **Direct Testimony of Janet Wells.** The direct testimony of Janet Wells supports the terms
19 and conditions in the ESA and describes how the ESA is in the public interest.

20 **Direct Testimony of Hank Will.** The direct testimony of Hank Will describes the ESA's
21 fixed long-term energy price and the underlying pricing model.

22 **Direct Testimony of Briana Kobor.** The direct testimony of Briana Kobor reviews
23 Google's footprint in Nevada, describes Google's corporate clean energy objectives and
24 addresses how the ESA meets Google's corporate clean energy objectives while protecting the
25 interest of all Nevada ratepayers.

26
27 ¹ The Company's power purchase agreement for this resource is presented to the Commission contemporaneous
28 with this Application, in Docket No. 24-05041.

1 kept under seal pursuant to NRS § 703.196 and NAC § 703.527 *et seq.* This information is
2 contained in a sealed envelope, appropriately marked, and contains the unredacted versions of
3 portions of the ESA and the testimony of Ms. Janet Wells and Mr. Hank Will and supporting
4 exhibits. These materials contain customer specific information of Google, as well as
5 commercially confidential information of Google and Sierra, which includes commercially
6 sensitive and/or trade secret information that derives independent economic value from not being
7 generally known. This information is not known outside Google or Sierra and its distribution is
8 limited within the Company. Publication of this information would also unfairly advantage
9 competing suppliers and impair the Company’s ability to achieve the most favorable pricing and
10 terms and conditions from suppliers on behalf of its customers.

11 To maintain the confidentiality of Google’s information and the commercially sensitive
12 information, the Joint Applicants have designated this information as confidential pursuant to
13 NRS § 703.196 and NAC § 703.5274. The public version of the filing will include redactions of
14 this confidential information. Pursuant to NAC § 703.5274(2), Joint Applicants request that the
15 above-described information not be disclosed to the public and that this information remain
16 confidential for a period of five years following the expiration or earlier termination of the ESA,
17 after which the Commission may return or destroy these materials, whichever is most
18 convenient. Protective agreements with the Regulatory Operations Staff (“Staff”) and the Bureau
19 of Consumer Protection (“BCP”) will be provided and, once executed, Staff and BCP will be
20 served with confidential unredacted versions of the above-described material.

21
22 **VII.**

23 **PRAYER FOR RELIEF**

24 WHEREFORE, Sierra and Google requests that the Commission:

- 25 (1) Approve the ESA between Sierra and Google;
26 (2) Approve Sierra’s request to maintain customer specific information and the
27 commercially sensitive information confidential for a period of five years; and

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(3) Grant such additional other relief as the Commission may deem appropriate and necessary.

Dated this 7th day of June, 2024.

Respectfully submitted,

**SIERRA PACIFIC POWER COMPANY
D/B/A NV ENERGY**

/s/Deborah Bone
Deborah Bone
Deputy General Counsel
Sierra Pacific Power Company
6100 Neil Road
Reno, NV 89511
775-834-5696
deborah.bone@nvenergy.com

CALLISTO ENTERPRISES LLC

PARSONS BEHLE & LATIMER

/s/ Justina A. Caviglia
Justina A. Caviglia
Nevada Bar No. 9999
50 West Liberty Street, Suite 750
Reno, Nevada 89501
775-323-1601
jcaviglia@parsonsbehle.com

Attorneys for Callisto Enterprises LLC

EXHIBIT A

**SCHEDULE NO. CTT
ENERGY SUPPLY AGREEMENT**

AMONG

SIERRA PACIFIC POWER COMPANY d/b/a NV ENERGY,

AND

CALLISTO ENTERPRISES, LLC.

dated May 13, 2024



This **SCHEDULE NO. CTT ENERGY SUPPLY AGREEMENT** (this “Agreement”), dated as of May 13, 2024 (the “Execution Date”), is made by and between SIERRA PACIFIC POWER COMPANY, a Nevada corporation doing business as NV Energy (“NV Energy”), and Callisto Enterprises, LLC, a Delaware limited liability company (“Customer”). NV Energy and Customer also may be referred to as a “Party” and collectively as the “Parties”.

RECITALS

WHEREAS, NV Energy is an electric service provider in Nevada, as defined in NRS Chapter 704;

WHEREAS, Customer is a current customer receiving electric service from NV Energy for its data centers in Storey County, Nevada (the “Facilities”);

WHEREAS, Customer desires that NV Energy provide the Facilities with certain electric service to support Customer’s corporate goals regarding cost-effective carbon-free energy (“CFE”) supply on an hourly load matching basis, which requires access to dedicated clean generation sources to supply its Facilities;

NOW THEREFORE, in consideration of the mutual promises set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, do hereby agree as follows:

AGREEMENT

1. CERTAIN DEFINITIONS.

1.1 “**Action**” means any claim, action, cause of action, demand, lawsuit, arbitration, inquiry, audit, notice of violation, proceeding, litigation, citation, summons, subpoena or investigation of any nature, civil, criminal, administrative, regulatory or otherwise, whether at law or in equity.

1.2 “**Affiliate**” means, with respect to NV Energy, Berkshire Hathaway Energy Company and its direct and indirect wholly-owned subsidiaries and, with respect to Customer, any Person who, directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control of, a Person.

1.3 “**Agreement**” has the meaning set forth in the preamble hereto.

1.4 “**BTGR Credits**” means rate credits for generation capacity and energy supply in the Base Tariff General Rate (“BTGR”) that are applied to Schedule No. CTT for CTT Load.

1.5 “**Business Day**” means any day, other than a Saturday, Sunday or legal holiday, on which commercial banks in Clark County, Nevada, are generally open for the transaction of business.



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1.6 “**Carbon Free Energy**” means energy generated from carbon free sources, including but not limited to, wind, solar, geothermal or as the Parties may otherwise agree.

1.7 “**CTT Energy Supply Commencement Date**” means the date that the Generating Facility has achieved commercial operation, as determined by NV Energy.

1.8 “**CTT Generating Facility Rate**” means the fixed rate of [REDACTED] to provide Customer with energy from the Generating Facility in the Resource Procurement Agreement.

1.9 “**CTT Energy Rate**” means a fixed rate of [REDACTED] for the energy delivered from the Generating Facility to the Customer under Schedule No. CTT.

1.10 “**CTT Load**” has the meaning set forth in Section 5.1.1.

1.11 “**CTT Effective Rate**” means an overall rate calculated by NV Energy for the Generating Facility Products that includes (a) the CTT Energy Rate pursuant to Section 1.9; (b) transmission and distribution usage costs based on the otherwise applicable rate class; (c) Base Tariff Energy Rate and Deferred Energy Accounting Adjustment rate for load not served from the Generating Facility (d) a franchise fee as set by Storey County; and (e) any applicable public program charges or fees, as determined by the PUCN, in each case, without duplication.

1.12 “**Customer**” has the meaning set forth in the preamble.

1.13 “**Effective Date**” has the meaning set forth in Section 2.2.

1.14 “**Environmental Attributes**” means any and all existing and future credits, benefits, emissions reductions, offsets, and allowances, attributable to the generation from the Generating Facility. This includes Portfolio Energy Credits as defined in Section 1.34.

1.15 “**Event of Default**” has the meaning set forth in Section 9.1.

1.16 “**Execution Date**” has the meaning set forth in the preamble above.

1.17 “**Excess Energy**” is defined as energy generated by the Generating Facility minus the energy served to Customer’s Facilities.

1.18 “**Facilities**” has the meaning set forth in the Recitals above.

1.19 “**Facilities Load**” means the total energy load of the Facilities.

1.20 “**Generating Facility**” means one or more carbon-free energy generating facilities approved by the PUCN from which NV Energy will procure or generate energy for Customer pursuant to Schedule No. CTT specified under Exhibit A.

1.21 “**Generating Facility Products**” means all products associated with the Generating Facility specified under Exhibit A, including but not limited to energy, capacity, environmental attributes and ancillary capacity.

1.22 “**Governmental Entity**” means any federal, state, or local government or political subdivision thereof, or any agency or instrumentality of such government or political subdivision, or any self-regulated organization or other non-governmental regulatory authority or quasi-governmental authority (to the extent that the rules, regulations or orders of such organization or authority have the force of law), or any arbitrator, court or tribunal of competent jurisdiction.

1.23 “**kPC**” means one thousand (1,000) PCs.

1.24 “**kW**” means kilowatt.

1.25 “**kWh**” means kilowatt-hour.

1.26 “**MW**” means megawatt.

1.27 “**MWh**” means megawatt-hour.

1.28 “**NAC**” means the Nevada Administrative Code, as amended.

1.29 “**NRS**” means the Nevada Revised Statutes, as amended.

1.30 “**NV Energy**” has the meaning set forth in the preamble hereto.

1.31 “**Party**” and “**Parties**” have the meanings set forth in the preamble.

1.32 “**PC Administrator**” means the Person appointed by the PUCN to administer the system of Portfolio Energy Credits established pursuant to the Renewable Energy Law or a successor law if the Renewable Energy Law is replaced, superseded or preempted by another law or regulatory regime tasked with enforcement of renewable energy quotas by users or utility providers in Nevada.

1.33 “**Person**” means an individual, corporation, partnership, limited liability company, trust, business trust, association, joint stock company, joint venture, sole proprietorship, unincorporated organization, Governmental Entity, or other entity.

1.34 “**Portfolio Energy Credit**” or “**PC**” means a unit of credit which equals one kilowatt-hour of electricity generated, acquired or saved (or deemed so), all as calculated by the PUCN Regulatory Operations Staff and certified by the PC Administrator pursuant to the Renewable Energy Law (or by a successor Governmental Entity pursuant to a successor law if the Renewable Energy Law is replaced, superseded or preempted by another law or regulatory regime tasked with enforcement of renewable energy quotas by utility providers in Nevada), and certified by WREGIS.

1.35 “**PUCN**” means the Public Utilities Commission of Nevada and any successor entity thereto.

1.36 “**PUCN Schedule No. CTT Approval**” means a final order issued by the PUCN that (a) approves the Schedule No. CTT, in form and substance satisfactory to NV Energy



and Customer, and (b) is not the subject of (i) a petition for reconsideration or rehearing, (ii) a petition for judicial review, or (iii) a petition for a preliminary injunction. For clarity and avoidance of doubt, and without limitation of the foregoing, if the Schedule No. CTT is approved by a final order of the PUCN, but such approval includes terms or conditions unacceptable to NV Energy or Customer, it shall be deemed that “PUCN Schedule No. CTT Approval” has not been obtained for purposes of this section.

1.37 “**PUCN ESA Approval**” means a final order issued by the PUCN that (a) approves this Agreement, in form and substance satisfactory to NV Energy and Customer, and (b) is not the subject of (i) a petition for reconsideration or rehearing, (ii) a petition for judicial review, or (iii) a petition for a preliminary injunction. For clarity and avoidance of doubt, and without limitation of the foregoing, if the Agreement is approved by a final order of the PUCN, but such approval includes terms or conditions unacceptable to NV Energy or Customer, it shall be deemed that “PUCN ESA Approval” has not been obtained for purposes of this section.

1.38 “**PUCN Resource Approval**” means a final order issued by the PUCN that (a) approves the Resource Procurement Agreement or new Generating Facility from which NV Energy will procure or generate energy for Customer, in form and substance satisfactory to NV Energy, and (b) is not the subject of (i) a petition for reconsideration or rehearing, (ii) a petition for judicial review, or (iii) a petition for a preliminary injunction. For clarity and avoidance of doubt, and without limitation of the foregoing, the Resource Procurement Agreement or Generating Facility is approved by a final order of the PUCN, but such approval includes terms or conditions unacceptable to NV Energy, it shall be deemed that “PUCN Resource Approval” has not been obtained for purposes of this section.

1.39 “**Renewable Energy Law**” means an act of the Nevada legislature relating to energy, or law that affects Customer’s renewable energy consumption or that requires certain electric service providers to comply with the portfolio standard for renewable energy, and providing for other matters relating thereto, codified as NRS 704.7801 through 704.7828, inclusive, and NAC 704.8831 through 704.8937, inclusive, and the rules and regulations of WREGIS, and the regulations, guidance and other requirements promulgated thereunder, in each case as such laws, regulations, guidance and requirements may be amended, preempted or superseded.

1.40 “**Resource Procurement Agreement**” means one or more agreements entered into by NV Energy and pursuant to which NV Energy shall obtain the right to provide energy, capacity, Environmental Attributes and ancillary services from the applicable Generating Facility and its associated facilities to serve all of the CTT Load.

1.41 “**Resource Procurement Agreement Rate**” means the rate paid by NV Energy for energy, capacity, Environmental Attributes and ancillary services from the Generating Facility as provided in the Resource Procurement Agreement.

1.42 “**RPS**” means the State of Nevada’s Renewable Portfolio Standard.

1.43 “**Schedule No. CTT**” means Nevada Power’s Clean Transition Tariff, Schedule No. CTT, to be filed for approval with the PUCN.



1.44 “**Short Term Avoided Cost**” means the long term avoided costs for the applicable period filed with the PUCN pursuant to NV Energy’s most recently approved Integrated Resource Plan filing minus the capacity costs.

1.45 “**Tariff Rules**” means the terms and conditions applicable to Schedule No. CTT that have been approved by the PUCN.

1.46 “**Tax**” or “**Taxes**” means the applicable federal, state, local or foreign income, gross receipts, license, payroll, employment, excise, severance, stamp, occupation, premium, windfall profits, environmental, customs duties, capital stock, franchise, profits, withholding, social security (or similar), unemployment, disability, real property (including assessments, fees or other charges based on the use or ownership of real property), personal property, transactional, sales, use, transfer, registration, value added, alternative or add-on minimum, estimated tax, or other tax of any kind whatsoever, or any liability for unclaimed property or escheatment under common law principles, including any interest, penalty or addition thereto, whether disputed or not, including any item for which liability arises as a transferee or successor-in-interest.

1.47 “**Term**” has the meaning set forth in Section 3.

1.48 “**Termination Payment**” means the compensation due to Company, if any, in the event Customer terminates pursuant to Section 4 of the Agreement. For purposes of calculating the Termination Payment, the price per kWh will be the difference between the Resource Procurement Agreement Rate and the weighted average of the per kWh levelized cost of energy for NV Energy’s most recent PUCN-approved renewable energy facilities for comparable periods taking into account all energy reasonably expected to be produced by the Generating Facility from the termination date through the expiration of the Resource Procurement Agreement term. In the event that such per kWh levelized cost of energy for NV Energy’s most recent PUCN-approved renewable energy facilities for comparable periods is greater than the Resource Procurement Agreement Rate, no Termination Payment shall be payable by Customer. As described in Section 4 below, the Termination Payment is only applicable if Customer elects to terminate this Agreement after the CTT Energy Supply Commencement Date.

1.49 “**Transferee**” has the meaning set forth in Section 10.2.

1.50 “**WREGIS**” means the Western Renewable Energy Generation Information System, or a successor organization or system.

2. CONDITIONS TO EFFECTIVENESS; EFFECTIVE DATE.

2.1 Conditions to Effectiveness. The effectiveness of this Agreement, including the Parties’ rights and obligations under this Agreement, is expressly subject to the fulfillment of each of the following conditions:

2.1.1 PUCN ESA Approval (a) shall have been obtained by June 1, 2025, provided that if by such date the PUCN ESA Approval is still pending a final decision by the PUCN, then such date shall be automatically extended for successive thirty (30)-day periods; and (b) shall be in full force and effect.



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2.1.2 PUCN Resource Approval (a) shall have been obtained by June 1, 2025, provided that if by such date the PUCN Resource is still pending a final decision by the PUCN, then such date shall be automatically extended for successive thirty (30)-day periods; and (b) shall be in full force and effect.

2.1.3 PUCN Schedule No. CTT Approval (a) shall have been obtained by June 1, 2025, provided that if by such date the PUCN Resource is still pending a final decision by the PUCN, then such date shall be automatically extended for successive thirty (30)-day periods; and (b) shall be in full force and effect.

For the avoidance of doubt, no aspect of this Agreement, other than this Section 2.1, shall have any effect unless and until each of the foregoing conditions have been fulfilled. If any of the foregoing conditions have not been fulfilled, this Agreement (including this Section 2.1) shall become void and of no force or effect as if it had not been entered into. Notwithstanding, the above, the rights and obligations of the Parties with respect to Section 6.3 Confidentiality shall remain in effect.

2.2 Effective Date. For purposes of this Agreement, the “Effective Date” is the date as of which each of the conditions set forth in Section 2.1 has been fulfilled.

3. TERM. The term of this Agreement shall commence on the Execution Date and shall continue until the expiration date of the Resource Procurement Agreements specified in Exhibit A, (the “Term”), subject to earlier termination of this Agreement pursuant to Section 4.1 or Section 9.2.

4. ELECTIVE TERMINATION BY CUSTOMER.

4.1 Customer may elect to terminate this Agreement at any time after the CTT Energy Supply Commencement Date and prior to the end of the Term, for any reason and at Customer’s sole discretion, upon written notice of such election to NV Energy at least thirty-six (36) months prior to the effective date of the termination.

4.2 If Customer validly terminates this Agreement pursuant to Section 4.1, Customer shall be liable for payment to NV Energy of the Termination Payment, if any, to mitigate any potential cost to NV Energy associated with such termination.

4.3 Customer does not have the right to terminate this Agreement prior to the CTT Energy Supply Commencement Date.

5. ENERGY SUPPLY.

5.1 Facilities Load; CTT Load.

5.1.1 Facilities Load and CTT Load. Customer and NV Energy acknowledge that this Agreement is executed to supply a portion of Customer’s Facilities Load. That load portion’s anticipated peak load is [REDACTED] (the “CTT Load”). Under no circumstance will the CTT Energy Rate apply to energy other than the energy generated by the Generating Facility. If the peak load of the Facilities is less than [REDACTED] as measured by the maximum peak billing demand reached



REDACTED PUBLIC VERSION

as of the date that is two years after the CTT Energy Supply Commencement Date, an additional charge of [REDACTED] will be added to the CTT Energy Rate. The additional charge will cease to be applied upon next billing period following the peak billing demand of the Facilities reaching [REDACTED].

5.1.2 Facilities Load Exceeding CTT Load. If the Facilities Load exceeds the CTT Load, NV Energy shall provide the Facilities electric service. Facilities Load that exceeds the CTT Load will be subject to the applicable rates, charges and fees of the Customer's otherwise applicable rate class, as a fully-bundled NV Energy customer unless agreed upon otherwise between NV Energy and Customer and approved by the PUCN. For the avoidance of doubt, charges assessed on Facilities Load in excess of CTT Load will not receive BTGR Credits as applicable under Schedule No. CTT.

5.2 CTT Energy Supply.

5.2.1 Procurement and Payment. Commencing on the CTT Energy Supply Commencement Date and continuing through the Term, NV Energy shall deliver to Customer Generating Facilities Products to serve Customer's CTT Load, and Customer shall pay to NV Energy the CTT Effective Rate with respect to the CTT Load. Invoices shall be provided to Customer monthly by the method or methods authorized by the Tariff Rules and shall be paid by Customer in accordance with payment terms set forth therein.

5.2.2 Forecast. Within thirty (30) days after the Effective Date, Customer shall provide NV Energy with a non-binding, forward-looking, five (5)-year monthly forecast (the "Forecast"). Customer shall update the Forecast annually and deliver such updated Forecast to NV Energy no later than six (6) months prior to the end of the period covered by the then-existing Forecast; provided that, in the event that Customer becomes aware of any material changes to the then-existing Forecast, Customer shall update such Forecast and deliver such updated Forecast to NV Energy as soon as is reasonably practicable. If Customer fails to deliver an updated Forecast to NV Energy as provided in this Section 5.3.2, Customer agrees that NV Energy shall use and be entitled to rely on the last Forecast received from Customer.

5.2.3 CTT Energy Rate Adjustment. If the developer of the Generating Facility requests a higher price under its Resource Procurement Agreement with NV Energy, NV Energy will notify Customer within five (5) Business Days of such request and its impact on CTT Energy Rate (the "CTT Energy Rate Adjustment"). Within thirty (30) Business Days of the notice, Customer shall inform NV Energy whether it agrees to or disagrees to the CTT Energy Rate Adjustment. If Customer agrees to the CTT Energy Rate Adjustment, then NV Energy will reflect such cost increase in the CTT Effective Rate beginning on the date such price increase takes effect under the contract between NV Energy and the developer and will continue for the remainder of the Term. If Customer does not agree to the CTT Energy Rate Adjustment, NV Energy may either (a) request the developer to continue under the existing contract, (b) terminate the contract with the developer and this Agreement, or (c) agree to the price increase under the contract with the developer, however, such increase will not be reflected in the CTT Energy Rate.

5.2.4 Generating Facility Products, Excess Energy and Portfolio Energy Credits.



REDACTED PUBLIC VERSION

(a) Generating Facility Products. Commencing on the CTT Energy Supply Commencement Date and continuing through the Term, Customer shall receive all products, including but not limited to energy, capacity, ancillary services and Environmental Attributes produced by the Generating Facility. Customer shall pay the CTT Effective Rate for all energy served to Customer's CTT Load, as specified in Section 5.2.1, above, and Customer shall pay the CTT Generating Facility Rate for all Excess Energy.

(b) Excess Energy and Associated Portfolio Energy Credits. NV Energy will purchase Excess Energy from Customer at a rate equivalent to its Short Term Avoided Cost. Alternatively, NV Energy may, at its election, purchase from Customer both Excess Energy and the PCs associated with the Excess Energy, at a rate equivalent to the higher of (i) [REDACTED] of its weighted average of the per kWh levelized cost of energy for NV Energy's most recent PUCN-approved renewable energy facilities for comparable periods, or (ii) its Short Term Avoided Costs. The settlement for such Excess Energy purchase or Excess Energy and PCs purchase will take place monthly as part of the next regularly scheduled invoice. The Short-Term Avoided Cost used for monthly settlement will be equal to the annual average of the hourly Short-Term Avoided Cost. During the first billing cycle of a calendar year an adjustment payment will be calculated to true-up Short-Term Avoided Cost reflecting the hourly granularity for each instance when Excess Energy or Excess Energy and PC purchase occurred.

(c) Certification of Portfolio Energy Credits. NV Energy will take such commercially reasonable actions as may be necessary and appropriate to cause WREGIS and the PC Administrator to certify or otherwise validate in a timely manner all PCs with respect to energy generated by the Generating Facility to which Customer is entitled. NV Energy shall make commercially reasonable efforts to deliver to Customer proof of certification of the PCs no later than the third Business Day of April for the preceding year. The Parties acknowledge and agree that the certification of PCs is WREGIS-dependent, and that the timing of certification is solely at WREGIS' discretion. NV Energy shall not be liable for certification delays or denials beyond its control.

(d) Retirement of Portfolio Energy Credits. NV Energy will take such commercially reasonable actions as may be necessary and appropriate to retire PCs, on behalf of Customer, with respect to energy generated by the Generating Facility, less any PCs purchased by NV Energy pursuant to Section 5.2.4(b) and to provide an annual report of such retirement which meets applicable certification and reporting requirements.

(e) Optional Transfer of Portfolio Energy Credits. If Customer elects to take ownership of the PCs to which it is entitled rather than have NV Energy retire them on behalf of Customer pursuant to Section 5.2.4(d), NV Energy shall not be required to incur any additional costs or expense for the transfer of such PCs to Customer. As such, any expense incurred for such transfer shall be borne by Customer, and invoiced as part of the next regularly scheduled invoice.

5.3 Effect of Termination of Resource Procurement Agreement or Failure of Generating Facility to Deliver Energy and Capacity.

5.3.1 If (a) the Resource Procurement Agreement is terminated for any reason other than a material breach or default by NV Energy prior to the date that the Generating Facility



has achieved commercial operation or (b) after the Generating Facility has achieved commercial operation, the Generating Facility is not delivering sufficient Generating Facility Products, NV Energy will be excused from obligations under this Agreement and will continue serving Customer under its otherwise applicable rate.

6. COVENANTS OF THE PARTIES.

6.1 Covenants of NV Energy.

6.1.1 PUCN ESA Approval. Following the Execution Date, NV Energy shall use commercially reasonable efforts to obtain the PUCN ESA Approval in a timely manner; provided that, in the event a final order is issued by the PUCN that (a) denies transactions contemplated by this Agreement, or (b) approves the transactions contemplated by this Agreement but such order imposes conditions not acceptable to NV Energy or Customer, NV Energy may, but shall not be obligated to, undertake further efforts to obtain the PUCN ESA Approval.

6.1.2 PUCN Resource Approval. Following the Execution Date, NV Energy shall use commercially reasonable efforts to obtain the PUCN Resource Approval in order to meet the CTT Energy Supply Commencement Date; provided that, in the event a final order is issued by the PUCN that (a) denies the Resource Procurement Agreement or Generating Facility, or (b) approves the Resource Procurement Agreement or Generating Facility but such order imposes conditions not acceptable to NV Energy or Customer, NV Energy may, but shall not be obligated to, undertake further efforts to obtain the PUCN Resource Approval.

6.2 Covenants of Customer.

6.2.1 No Alternative Provider. After the Effective Date and during the Term of this Agreement, NV Energy shall be the sole and exclusive provider of electricity to meet Customer's electricity requirements for the Facilities. However, this provision does not preclude Customer from installing any back-up generation or storage equipment on its site that is either (a) owned by Customer, or (b) leased by Customer, under an agreement that makes Customer the sole owner of the electrical output.

6.3 Confidentiality.

6.3.1 Disclosure. Neither Party shall disclose the content of this Agreement, or disclose any information exchanged between the Parties related to this Agreement, except to its Affiliates and advisors, without the prior written consent of the other Party except as required by applicable law, by any court or other Governmental Entity, but only to the extent, that, based upon reasonable advice of counsel, a Party is required to do so and prior to making such disclosure, the Party shall, to the extent legally permitted, provide the other Party with prompt notice of such disclosure. Notwithstanding the above, NV Energy may disclose this Agreement and information exchanged related to the content of this Agreement to the PUCN and its staff for purposes of obtaining approval of this Agreement or to otherwise advance the purposes of this Agreement.

6.3.2 Public Announcements. Except as permitted in this Section 6.3.2 neither Party may release, distribute, or disseminate any information to the public concerning this Agreement or issue or make any public announcement, press release, or similar public statement



concerning this Agreement (each, an “Announcement”) unless the Announcement is issued jointly by the Parties or, prior to the release of the Announcement, the Party furnishes the other Party with a copy of the proposed Announcement and obtains the approval of the other Party, which approval may not be unreasonably withheld, conditioned, or delayed. After any Announcement is issued in accordance with this Section 6.3.2, either Party may issue subsequent Announcements with the same content and wording of the originally issued Announcement, until otherwise notified by the other Party.

7. **NOTICES.**

7.1 **Method of Delivery; Contacts.** Except for the monthly invoices referenced in Section 5.2, each notice, consent, request, or other communication required or permitted under this Agreement must be in writing and delivered personally, transmitted by electronic mail, or sent by certified mail (postage prepaid, return receipt requested) or by a recognized international courier or overnight delivery service provider, and addressed to a Party as follows:

Customer:
Callisto Enterprises, LLC
a Delaware limited liability company

Email addresses: [REDACTED]

NV Energy:
NV Energy
7155 S. Lindell Road, MS B13RE
Las Vegas, NV 89118
Attention: Manager, Energy Supply Contract Management
Email: ContractManagement@nvenergy.com

With a copy to:
NV Energy
6226 W. Sahara Ave., M/S 2
Las Vegas, NV 89146
Attention: General Counsel
Email: legal@nvenergy.com

7.2 **Receipt of Notice; Change of Information.** Each notice, consent, request, or other communication is deemed to have been received by the Party to whom it was addressed (a) when delivered if delivered personally; (b) upon acknowledgement of receipt, if delivered by telecopier or electronic mail, (c) on the third (3rd) Business Day after the date of mailing if mailed by certified mail; or (d) on the date officially recorded as delivered according to the record of delivery if delivered by courier or overnight delivery. Each Party may change its contact information for purposes of the Agreement by giving written notice to the other Party in the manner set forth above.



8. REPRESENTATIONS AND WARRANTIES OF THE PARTIES.

8.1 Representations and Warranties of Customer.

8.1.1 Customer's Standing. Customer represents that it is (a) a duly organized and validly existing limited liability company which is in good standing under the laws of the State of Nevada, and (b) licensed to do business in the State of Nevada.

8.1.2 Customer's Authority; Enforceability. Customer has the full limited liability power and authority to execute and deliver this Agreement and the other transaction documents to which it will be a party in connection with the transactions contemplated hereby, to perform its obligations hereunder and thereunder and to consummate the transactions contemplated hereby and thereby. The execution and delivery by Customer of this Agreement and the other transaction documents to which it will be a party in connection with the transactions contemplated hereby, and the performance by Customer of its obligations hereunder and thereunder, have been duly and validly authorized by all necessary entity action, and assuming due and valid authorization, execution and delivery thereof by the other Party, will be when delivered, valid and binding obligations of Customer, enforceable against Customer in accordance with their terms.

8.1.3 No Pending Actions, Suits or Proceedings against Customer. Customer represents that, to its knowledge, there are no Actions pending or threatened against Customer in any court or before any administrative agency that would prevent its performance under this Agreement.

8.2 Representations and Warranties of NV Energy.

8.2.1 NV Energy's Standing. NV Energy represents that it (a) is duly organized, validly existing and in good standing under the laws of the State of Nevada, and (b) is licensed to do business in the State of Nevada.

8.2.2 NV Energy's Authority; Enforceability. NV Energy has the full corporate power and authority to execute and deliver this Agreement and the other transaction documents to which it will be a party in connection with the transactions contemplated hereby, to perform its obligations hereunder and thereunder and to consummate the transactions contemplated hereby and thereby. The execution and delivery by NV Energy of this Agreement and the other transaction documents to which it will be a party in connection with the transactions contemplated hereby, and the performance by NV Energy of its obligations hereunder and thereunder, have been duly and validly authorized by all necessary entity action, and assuming due and valid authorization, execution and delivery thereof by the other Party, will be when delivered, valid and binding obligations of NV Energy enforceable against NV Energy in accordance with their terms.

8.2.3 No Pending Actions, Suits or Proceedings against NV Energy. NV Energy represents that, to its knowledge, there are no Actions pending or threatened against NV Energy in any court or before any administrative agency that would prevent its performance under this Agreement.

9. DEFAULT; REMEDIES.



9.1 Each of the following shall be an “Event of Default” under this Agreement:

9.1.1 If NV Energy fails to deliver the CTT Energy pursuant to the terms of this Agreement; provided, however, that such failure shall not be considered an Event of Default in the event of a resource or transmission outage that requires curtailment of service in order to maintain reliability, system integrity or safety;

9.1.2 If Customer fails to pay any amount when due in accordance with Schedule No. CTT, or any other amount due pursuant to this Agreement within the period specified in Schedule No. CTT (or within forty-five (45) days after such amount is due when no other period is specified in Schedule No. CTT), provided that NV Energy shall provide written notice of such non-payment to Customer and Customer shall have fifteen (15) days in which to cure such non-payment;

9.1.3 If either Party is in material breach of any representation or warranty set forth herein or fails to perform any covenant, agreement or other material obligation set forth in this Agreement, including the covenants of the Parties set forth in Section 6 (other than failure to pay referenced in Section 9.1.2), and such breach or failure is not cured within thirty (30) days after written notice of the default is provided to the defaulting Party from the non-defaulting Party; provided, however, that the cure period shall be extended by an additional thirty (30) days if (a) the defaulting Party is unable to cure such breach, (b) failure is not cured within such thirty (30) day period but such Party is diligently pursuing a cure, and (c) the material breach cannot reasonably be cured within such thirty (30) day period; or

9.1.4 If either Party files any voluntary petition in bankruptcy, or any of such Party’s creditors files an involuntary petition, which involuntary petition remains undischarged for a period of thirty (30) days.

9.2 Termination. Upon the occurrence of an Event of Default, the non-defaulting Party shall provide notice of the default to the defaulting Party and shall specify in such notice the basis for the Event of Default. In addition to the cure periods specified in Section 9.1.3, unless another cure period is specified in this Agreement, the defaulting Party shall have thirty (30) days from the date the defaulting Party receives written notice of an Event of Default to cure the Event of Default. If the Event of Default is not cured within such thirty (30)-day period, or another cure period specified in this Agreement, the non-defaulting Party may provide notice to the defaulting Party that the Agreement has been terminated. The termination shall be effective in accordance with the notice provisions of this Agreement. The defaulting Party shall remain liable for any obligations that the defaulting Party had pursuant to the Agreement prior to the date of termination, in addition to any other surviving obligations specified herein or remedies available pursuant to Section 9.3.

9.3 Remedies.

9.3.1 In General. Subject to Sections 9.1 and 9.2, upon an Event of Default by a Party, the other Party shall have, in addition to any other remedies available to such Party at law or in equity, the right, but not the obligation, to terminate or suspend this Agreement with respect



to all obligations arising after the effective date of such termination or suspension (other than payment obligations relating to obligations arising prior to such termination or suspension).

9.3.2 Termination Payment. In the event this Agreement is validly terminated by NV Energy in connection with an Event of Default of Customer pursuant to Section 9.2, in addition to Customer remaining liable for its obligations prior to the date of termination, Customer shall be liable for payment to NV Energy of the Termination Payment, if any, to mitigate any potential cost to NV Energy associated with such termination.

10. MISCELLANEOUS PROVISIONS.

10.1 Limitation of Liability. Notwithstanding anything to the contrary contained in this Agreement, neither Party shall be liable to the other Party or a third party for any consequential, punitive, indirect, exemplary, expectation or incidental damages, including, but not limited to, damages based on lost revenues or profits. This Section 10.1 shall survive the expiration or earlier termination of, or any default or excuse of performance under, this Agreement.

10.2 Assignment; Binding Effect. Without the prior written consent of the other Party, which shall not be unreasonably withheld, delayed or conditioned, neither Party may assign, delegate or otherwise transfer to any third party (a “Transferee”), whether by contract, operation of law or otherwise, including in connection with any reorganization, merger or consolidation in which the other Party is not the surviving entity, this Agreement or any of a Party’s rights or obligations under this Agreement. Any assignment, delegation or other transfer in breach of this Section 10.2 will be void and of no effect. As a condition to any granting of a Party’s written consent, the Transferee must agree to assume all obligations of such Party under this Agreement pursuant to a written agreement in form and substance reasonably satisfactory to the other Party. This Agreement is binding upon, inures to the benefit of, and is enforceable by the Parties and their respective successors and permitted assigns. Notwithstanding the foregoing, either Party may assign, delegate or otherwise transfer this Agreement or any of a Party’s rights or obligations under this Agreement to its Affiliate(s), so long as such Affiliate(s) agree to assume all obligations of such Party under this Agreement pursuant to a written agreement in form and substance reasonably satisfactory to the other Party.

10.3 Taxes, Fees or Charges from Governmental Entities. Customer is responsible for any Taxes, fees or charges including, but not limited to, those from Governmental Entities imposed on or associated with the Portfolio Energy Credits or their transfer to Customer. Either Party, upon written request of the other Party, shall provide a certificate of exemption or other reasonably satisfactory evidence of exemption if such Party is exempt from Taxes, and shall use reasonable efforts to obtain and cooperate with the other Party in obtaining any exemption from or reduction of any Tax, fee or charges including, but not limited to, those from Governmental Entities.

10.4 Expenses. Except as otherwise expressly provided in this Agreement, each Party shall pay its own costs and expenses incurred in connection with the negotiation, execution, performance and enforcement of its rights and obligations under this Agreement and the transactions contemplated hereby.



10.5 No Waiver. The failure of either Party to enforce any of the provisions of this Agreement at any time, or to require performance by either Party of any of the provisions of this Agreement at any time, will not be a waiver of any provisions, nor in any way affect the validity of the Agreement, or either Party's right to enforce each and every provision hereof.

10.6 Remedies. All rights and remedies of either Party provided for in this Agreement are cumulative and in addition to, and not in lieu of, any other remedies available to either Party at law, in equity, or otherwise, except as provided in Section 10.1.

10.7 Governing Law, Venue. This Agreement is governed by and construed in accordance with the laws of the State of Nevada, without giving effect to any conflict of law principles that would apply the laws of another jurisdiction. In the event the PUCN has jurisdiction over a civil action or remedy brought under this Agreement, the Parties agree that they will first seek to initiate such action before the PUCN. In the event the PUCN lacks jurisdiction over such a dispute, the Parties agree the dispute will be brought in the U.S. District Court for the District of Nevada. In the event the federal court lacks jurisdiction over such a dispute, the Parties agree the dispute will be brought in the state district court in Clark County, Nevada. The Parties agree not to initiate any legal action against the other Party except in the jurisdictions as provided in this Section 10.7.

10.8 Waiver of Jury Trial. TO THE FULLEST EXTENT PERMITTED BY LAW, EACH OF THE PARTIES HERETO WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS AGREEMENT. EACH PARTY FURTHER WAIVES ANY RIGHT TO CONSOLIDATE ANY ACTION IN WHICH A JURY TRIAL HAS BEEN WAIVED WITH ANY OTHER ACTION IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED.

10.9 Integration. This Agreement represents the entire and integrated agreement between NV Energy and Customer and supersedes all prior and contemporaneous oral and written communications, representations, and agreements relating to the subject matter of the transaction, except as otherwise expressly stated herein.

10.10 Amendments. Any change, modification, or amendment to this Agreement is not enforceable unless consented to in writing by the Parties and executed with the same formality as this Agreement. The Parties acknowledge that any change, modification or amendment to this Agreement may require approval of the PUCN.

10.11 Severability. If any portion or provision of this Agreement is deemed invalid, illegal, or unenforceable, or any event occurs that renders any portion or provision of the Agreement void, including but not limited to a final order by the PUCN, the other portions or provisions of this Agreement will remain valid and enforceable. Any voided portion or provision will be deemed severed from this Agreement, and the balance of this Agreement will be construed and enforced as if this Agreement did not contain the particular portion or provision held to be void. The Parties further agree to amend this Agreement to replace any stricken portion or provision with a valid provision that comes as close as possible to the intent of the stricken portion



or provision. Nothing in this Section 10.11 shall be construed to waive the conditions in Section 2.1.

10.12 No Third-Party Beneficiaries. Nothing expressed or implied in this Agreement is intended, or should be construed, to confer upon or give any person or entity not a party to this Agreement any third-party beneficiary rights, interests, or remedies under or by reason of any term, provision, condition, undertaking, warranty, representation, or agreement contained in this Agreement.

10.13 Headings; Exhibits; Cross References. The headings or section titles contained in this Agreement are used solely for convenience and do not constitute a part of this Agreement, nor should they be used to aid in any manner in the construction of this Agreement. All exhibits and schedules attached to this Agreement are incorporated into this Agreement by reference. All references in this Agreement to Sections, Subsections, Exhibits, and Schedules are to Sections, Subsections, Exhibits, and Schedules of or to this Agreement, unless otherwise specified. Unless the context otherwise requires, the singular includes the plural and the plural includes the singular and the neuter includes feminine and masculine.

10.14 Performance of Acts on Business Days. Any reference in this Agreement to time of day refers to local time in Clark County, Nevada. All references to days in this Agreement refer to calendar days, unless stated otherwise. If the final date for payment of any amount or performance of any act required by this Agreement falls on a day other than a Business Day, that payment is required to be made or act is required to be performed on the next Business Day.

10.15 No Construction Against Drafting Party. The language used in this Agreement is the product of both Parties' efforts and each Party hereby irrevocably waives the benefits of any rule of contract construction that disfavors the drafter of a contract or the drafter of specific words in a contract.

10.16 Business Formation. Nothing in this Agreement creates a partnership, joint venture or other similar business construct between the Parties.

10.17 Counterparts. This Agreement may be executed in any number of counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

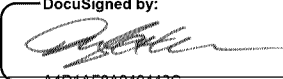
10.18 Time of Essence. Time is of the essence with respect to all obligations of the Parties hereunder.

[Signature page follows]

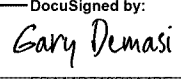


IN WITNESS WHEREOF, this Agreement has been duly executed by the Parties as of the Execution Date.

SIERRA PACIFIC POWER COMPANY, a Nevada corporation d/b/a NV ENERGY

DocuSigned by:
By:  14-May-2024
A4D1AF6A949443C...
Name: Douglas A. Cannon
Title: President & CEO

Callisto Enterprises, a Delaware limited liability company

DocuSigned by:
By:  15-May-2024
FDA14D740D9A4BE...
Name: Gary Demasi
Title: Authorized Signatory



Confidential Exhibit A

Generating Facility(s)

Generating Facility	[REDACTED]
Generating Facility Developer	[REDACTED]
Term (as defined in the PPA):	[REDACTED]
Expected Commercial Operation Date (as defined in the PPA):	[REDACTED]
Expected Generating Facility Output in the first Contract Year (as those terms are defined in the PPA):	[REDACTED]
Percentage of Generating Facility capacity dedicated to Customer:	[REDACTED]
PPA Execution Date:	[REDACTED]



EXHIBIT B

**PUBLIC UTILITIES COMMISSION OF
NEVADA DRAFT NOTICE
(Applications, Tariff Filings, Complaints, and Petitions)**

The Commission requires a draft notice be included with all applications, petitions and complaints. See Nevada Administrative Code 703.162. Please include one copy of this form with all the above filings.

I. A title that generally describes the relief requested (see NAC 703.160(5)(a)):

Application of Sierra Pacific Power Company d/b/a NV Energy and Callisto Enterprises, LLC for Approval of an Energy Supply Agreement.

II. The name of the applicant, complainant, petitioner or the name of the agent for the applicant, complainant or petitioner (see NAC 703.160(5)(b)):

Sierra Pacific Power Company d/b/a NV Energy and Callisto Enterprises, LLC

III. A brief description of the purpose of the filing or proceeding, including, without limitation, a clear and concise introductory statement that summarizes the relief requested or the type of proceeding scheduled **AND** the effect of the relief or proceeding upon consumers (see NAC 703.160(5)(c)):

Sierra Pacific Power Company and Callisto Enterprises, LLC are requesting the Public Utilities Commission of Nevada issue an Order approving an energy supply agreement to provide electric service to with Callisto Enterprises, LLC's facilities, located in Storey County, Nevada. The ESA will provide a mechanism to allow Callisto Enterprises LLC's facility to take service under the Clean Transition tariff ("CTT"), pending approval of the CTT in Docket No. 24-05023.

IV. A statement indicating whether a consumer session is required to be held pursuant to Nevada Revised Statute ("NRS") 704.069(1):¹

No. A consumer session is not required pursuant to NRS 704.069.

V. If the draft notice pertains to a tariff filing, please include the tariff number **AND** the section number(s) or schedule number(s) being revised.

Not Applicable

¹ **NRS 704.069 Commission required to conduct consumer session for certain rate cases; Commission required to conduct general consumer session annually in certain counties.**

1. The Commission shall conduct a consumer session to solicit comments from the public in any matter pending before the Commission pursuant to NRS 704.061 to 704.110, inclusive, in which:

(a) A public utility has filed a general rate application, an application to recover the increased cost of purchased fuel, purchased power, or natural gas purchased for resale or an application to clear its deferred accounts; and

(b) The changes proposed in the application will result in an increase in annual gross operating revenue, as certified by the applicant, in an amount that will exceed \$50,000 or 10 percent of the applicant's annual gross operating revenue, whichever is less.

2. In addition to the case-specific consumer sessions required by subsection 1, the Commission shall, during each calendar year, conduct at least one general consumer session in the county with the largest population in this state and at least one general consumer session in the county with the second largest population in this state. At each general consumer session, the Commission shall solicit comments from the public on issues concerning public utilities. Not later than 60 days after each general consumer session, the Commission shall submit the record from the general consumer session to the Legislative Commission.

JANET WELLS

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BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

Sierra Pacific Power Company d/b/a NV Energy
Docket No. 24-06____
Energy Supply Agreement with Callisto Enterprises, LLC

Prepared Direct Testimony of

Janet Wells

1. Q. PLEASE STATE YOUR NAME, OCCUPATION, BUSINESS ADDRESS AND PARTY FOR WHOM YOU ARE FILING TESTIMONY.

A. My name is Janet Wells. My current position is Vice President of Regulatory for Nevada Power Company d/b/a NV Energy (“Nevada Power” or the “Company”) and Sierra Pacific Power Company d/b/a NV Energy (“Sierra,” and together with Nevada Power, the “Companies”). My primary business address is 6100 Neil Road, Reno, Nevada. I am filing testimony on behalf of Sierra.

2. Q. PLEASE DESCRIBE YOUR BACKGROUND AND EXPERIENCE IN THE UTILITY INDUSTRY.

A. I hold a Bachelor of Arts Degree in Geography and a Master of Science Degree in Applied Economics and Statistics. I have more than 15 years of utility experience within the Rates and Regulatory Affairs department. Prior to joining the Companies, and during an absence from the Companies, I worked in economic consulting and research. The details of my background and experience are provided in **Exhibit Wells-Direct-1**.

1 3. Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS VICE PRESIDENT
2 OF REGULATORY.

3 A. As Vice President of Regulatory, my responsibilities include overseeing the
4 preparation of regulatory filings before the Public Utilities Commission of Nevada
5 (“Commission”), and specifically, the work performed by the Load Research and
6 Forecasting, Pricing, and Regulatory Affairs technical teams.

7
8 4. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

9 A. Yes, most recently in Docket No. 24-05041 the 2024 Joint Triennial Integrated
10 Resource Plan. **Exhibit Wells-Direct-1** provides a full list of proceedings in which
11 I have testified before the Commission.

12
13 5. Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

14 A. The purpose of my testimony is to provide support for Sierra’s request for approval
15 of the Energy Supply Agreement (“ESA”) with Callisto Enterprises, LLC, a
16 subsidiary of Google (“Google”). Google is eligible to apply for an ESA through
17 the pending Clean Transition Tariff (“CTT”).¹ Google is an existing fully-bundled
18 retail customer of Sierra and will remain a fully-bundled retail customer until
19 transitioning to the long-term energy supply period of the ESA. Specifically, I will
20 provide an overview of the framework of the ESA and explain how it provides a
21 unique opportunity to meet the sustainability objectives of Google, while also
22 providing value to the Company’s non-participating customers. In addition, I will
23 explain why the ESA is in the public interest. In summary, my testimony shows
24 that the ESA between Sierra and Google is in the public interest, advances Nevada’s

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27 ¹ Docket No. 24-05023.

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sustainability and economic policies and objectives, and benefits all Sierra customers. Hank Will provides testimony in support of the calculation of the long-term energy supply rate for the ESA.

6. Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring the following Exhibits:

Exhibit Wells-Direct-1 Statement of Qualifications

7. Q. IS SIERRA REQUESTING CONFIDENTIAL TREATMENT OF CERTAIN INFORMATION CONTAINED IN YOUR TESTIMONY?

A. Yes. Confidential information is redacted in my testimony and the ESA.

8. Q. PLEASE DESCRIBE THE CONFIDENTIAL MATERIAL.

A. Portions of my testimony and the ESA contain customer specific information of Google, as well as confidential information of Sierra which is commercially sensitive and/or trade secret information that derives independent economic value from not being generally known. This information is not known outside Sierra and its distribution is limited within the Company.

9. Q. FOR HOW LONG DOES SIERRA REQUEST CONFIDENTIAL TREATMENT?

A. The requested period for confidential treatment is for no less than five years.

1 10. Q. WILL CONFIDENTIAL TREATMENT IMPAIR THE ABILITY OF THE
2 COMMISSION'S REGULATORY OPERATIONS STAFF ("STAFF") OR
3 THE BUREAU OF CONSUMER PROTECTION ("BCP") TO
4 PARTICIPATE IN THIS DOCKET.

5 A. No. In accordance with the accepted practice in Commission proceedings, the
6 confidential material will be provided to Staff and the BCP under standardized
7 protective agreements with them.
8

9 11. Q. PLEASE PROVIDE AN OVERVIEW OF THE ESA BETWEEN SIERRA
10 AND GOOGLE.

11 A. The ESA between Sierra and Google (collectively the "Parties") is an agreement
12 that requires Sierra to serve a portion of Google's load corresponding to a peak load
13 of [REDACTED] megawatts at its data center in Sierra's territory with a new renewable
14 resource. Google meets the eligibility requirement of the pending CTT, which
15 provides a path for existing customers with an average hourly load greater than 5
16 megawatts to have their energy needs served by Sierra through an ESA. Google's
17 ESA represents a 15-year contract that aligns with the life of a new renewable
18 resource currently requested for approval in the 2024 Joint Integrated Resource
19 Plan, Docket No. 24-05041. Google's ESA provides for a fixed price for all energy
20 provided by the resource while using the variable base tariff energy rate ("BTER")
21 and deferred energy accounting adjustment rate ("DEAA") to apply to all other
22 provision of energy.² The long-term energy supply period of Google's ESA begins
23 when the resource is commercially operable and lasts for 15 years from that date,
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26 _____
27 ² If Google's load exceeds that of the new renewable resource, Google will pay the otherwise applicable fully bundled
rate.

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after which Google will return to the fully-bundled retail rate or could pursue a new
ESA.

**12. Q. DESCRIBE HOW GOOGLE’S ESA FULFILLS THE KEY COMPONENTS
OF THE PENDING CTT.**

A. The CTT is intended to provide eligible customers the option to receive retail electric service from the Company, reflecting a price within an ESA for energy associated with a new clean energy resource(s) proposed concurrently in an Integrated Resource Plan. Google meets the eligibility requirements as an existing fully-bundled customer of Sierra with an average hourly load that exceeds 5 megawatts. The long-term energy supply rate within Google’s ESA reflects a new renewable resource currently requested for approval in the 2024 Joint Integrated Resource Plan. The long-term energy supply period of Google’s ESA aligns with the contract terms of the new renewable resource and also fits the customers’ needs for a long-term solution to reach their clean energy goals. The ESA model provides a comparison to the otherwise applicable effective rate to demonstrate that Google’s ESA price results in an overall effective rate that is no less than the overall effective rate of the otherwise applicable schedule, which can be considered when evaluating whether the public interest standard is met.³ The mechanics of implementing that calculation are provided in the testimony of Mr. Will.

³ Other considerations may influence the assessment of the public interest standard.

1 **13. Q. PLEASE EXPLAIN THE PRICE GOOGLE PAYS FOR ENERGY UNDER**
2 **THE LONG-TERM ENERGY SUPPLY PERIOD.**

3 A. During the long-term energy supply period, Google will pay a fixed price of
4 \$ [REDACTED] /MWh for energy consumed by Google’s facilities for any output generated
5 by the ESA resource. The price per MWh for the ESA resource, an enhanced
6 geothermal system, includes the rate provided in the purchased power agreement
7 (“PPA”) currently requested for approval in the 2024 IRP.⁴ A description of how
8 the fixed price was calculated is provided in the testimony of Mr. Will and detailed
9 in the confidential workpaper provided with Mr. Will’s testimony.

10
11 **14. Q. DOES GOOGLE HAVE A RIGHT TO TERMINATE THE ESA? IF SO,**
12 **WHEN AND UNDER WHAT CONDITIONS?**

13 A. Yes. The ESA provides Google the right to terminate once the long-term energy
14 supply period commences. However, Google must provide timely notice of such
15 intent per the terms of the ESA. In the event it elects to terminate the ESA, the ESA
16 also includes a provision requiring an early termination payment that is meant to
17 hold non-participating customers harmless for the period encompassing the
18 effective date of termination until the expiry of the ESA term.

19
20 **15. Q. WILL THE ENTIRE OUTPUT OF THE RENEWABLE ENERGY**
21 **FACILITIES SERVE GOOGLE EXCLUSIVELY?**

22 A. Yes. The output of the renewable energy facility will be provided to and paid for
23 by Google. In the event excess energy is generated, excess energy from the resource
24 is purchased by Sierra after Google first pays the price premium that exceeds the
25

26 _____
27 ⁴ The PPA presented to the Commission contemporaneous with this Application, in Docket No. 24-05041, is the Fervo
project designated to be sleeved to Google.

1 comparable short term avoided costs. The ESA also provides an option for Sierra
2 to purchase renewable credits associated with any excess energy at the terms
3 provided in the ESA. The nameplate capacity of the resource is 115 MW. Google
4 will pay a fixed long-term energy rate for every MWh of energy produced by the
5 resource.

6
7 **16. Q. IS THE ESA BETWEEN SIERRA AND GOOGLE IN THE PUBLIC**
8 **INTEREST?**

9 A. Yes, the ESA is in the public interest for the reasons stated below.

10
11 First, this agreement retains an existing customer that is eligible to seek an
12 alternative provider within the Company's systems, which leads to more efficient
13 planning, procurement, and utilization of utility-controlled assets. This stability and
14 efficiency tends to drive down the costs of many of the activities Sierra undertakes
15 on behalf of all customers.⁵

16
17 Second, the model informing the long-term price in the energy supply agreement
18 uses the same cost of the resource being requested in the 2024 IRP for all output
19 from the resource to be paid by Google. That cost is applied to all output from the
20 resource and adds in the cost of grid supplied capacity and planning reserve margin
21 for Google. This results in no additional cost being spread to existing
22 customers. The resource serving Google's load brings the diversity of geothermal
23 to Sierra's system and also presents potential future benefit to Nevada if the
24 technology expands to additional projects. Without the ESA and the CTT with

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⁵ Currently in Sierra's territory there is no import capacity that prevents customers from seeking an alternative
27 provider. However, soon after the anticipated commercial operation date of the new renewable resources, import
28 capacity is anticipated to become available.

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Google, Sierra would not have brought the geothermal resource for approval given the price premium.

Third, for energy provided to Google in hours where the resource output is insufficient to meet Google’s load, Google will pay the variable BTER and DEAA rates. By paying this variable rate, Google is contributing to the fuel and purchased power costs, including a portion of the existing renewables contracts identified in the R-BTER rate component. There is a benefit to existing customers from Google’s contribution to fuel and purchased power costs because the hours where Google will be relying on the grid to serve its load are lower cost hours, yet Google will pay the flat BTER and DEAA rate, calculated as the average of all hours. For the energy provided to Google where the output from the resource is insufficient, Google is also contributing to system capacity costs based on the 25-year average of the capacity portion of the long-term avoided costs presented for approval in the 2024 IRP. This results in ensuring no additional cost to existing customers and provides a benefit in the difference between the average fuel and purchased power costs paid versus the cost of fuel and purchased power when serving Google under this rate.

Fourth, in addition to the planning reserve margin and capacity costs described above, Google will pay the fully bundled otherwise applicable rate once the load at its facility exceeds the full capacity of the resource. No capacity protection cost is needed due to the fact the overall effective rate under Google’s ESA exceeds the overall effective rate under the otherwise applicable fully-bundled rate.

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Fifth, approximately [REDACTED] percent of Google’s load will be served by renewable energy from the ESA resource. This proportion exceeds the current state mandated renewable portfolio standard and therefore increases the overall renewable proportion for Sierra as a total, furthering the state’s sustainability goals.

Sixth, the ESA is conditioned on both the approval of the CTT and the resource, providing a path to remain as a fully-bundled retail customer of Sierra thereby protecting existing customers.

Finally, the ESA will continue to serve as a template for other existing large customers to replicate, which will result in the further development of new clean energy resources located throughout the state.

17. Q. DOES RETIRING THE PORTFOLIO ENERGY CREDITS ON GOOGLE’S BEHALF OR TRANSFERRING THE PORTFOLIO ENERGY CREDITS TO GOOGLE UNDER THE ESA ADVERSELY AFFECT SIERRA OR ITS’ CUSTOMERS?

A. No. The renewable energy facility proposed is concurrently being considered by the Commission for approval in the 2024 IRP and is designated entirely to serve Google’s load. Sierra’s position relative to compliance with Nevada’s RPS will not be adversely impacted.

18. Q. PLEASE SUMMARIZE YOUR RECOMMENDATION.

A. I recommend that the Commission approve the ESA between Google and Sierra.

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19. Q. DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY?

A. Yes.

EXHIBIT WELLS-DIRECT-1

Janet C. Wells
Vice President of Regulatory
Rates and Regulatory Affairs
NV Energy
6100 Neil Road
Reno, Nevada 89511-1137
(775) 834-4135

Mrs. Wells has been an employee of NV Energy for more than fifteen years and her time at the company includes her previous positions as Regulatory Policy Director, Manager of Load Research, Senior Economist and Staff Economist in the Rates and Regulatory Affairs department and her current position as Vice President of Regulatory. Her current responsibilities are focused on the analytical and strategic approaches to regulatory issues and filings.

Prior to joining NV Energy, Mrs. Wells had experience in economic consulting and research in both corporate and academic environments, detailed below, as well as other non-profit business experience not specifically detailed below.

Employment History

NV Energy

October 2011 to Present

December 2000 to August 2005

Vice President of Regulatory

May 2022 to Present

- Oversee the preparation of regulatory filings before the Public Utilities Commission of Nevada and specifically the Load Research, Pricing, and Regulatory Affairs technical teams.

Regulatory Policy Director, Rates and Regulatory Affairs

March 2020 to April 2022

- Direct analytical and strategic approaches to regulatory issues and filings as well as corporate deliverables. Conduct research and analysis in support of new regulatory initiatives. Collaborate with regulatory groups in developing analysis and strategic approaches to integrating regulatory, load research, load forecasting, and pricing.
- Continue to support the management and technical production of class loads and other regulatory filings employing load data analyses.

Manager, Load Research, Rates and Regulatory Affairs

April 2017 to February 2020

Supervisor, Load Research, Rates and Regulatory Affairs

July 2012 to March 2017

- Manage all data and analysis related to producing hourly class loads for all Nevada Power and Sierra Pacific customer classes. Specifically, this process includes verification and estimation of interval data from multiple systems, population identification and validation, statistical sampling from populations, expansion of sample classes to produce class level total loads, and verification of final class loads to historical loads.

- Support all regulatory filings and data requests with load data and analysis ranging from: providing actual data, drafting responses, providing feedback to responses, and documenting completed analysis. Write and support testimony as needed.
- Provide validated load data and analysis to numerous areas within the company including Major Accounts, Load Forecasting, Energy Efficiency, Billing, Contracts, and to specific projects within the company such as the Energy Imbalance Market and Advanced Metering Infrastructure. In addition, provide validated load data where appropriate for external requests.
- Provide expertise and support to other major projects related to load data management and analysis including all work from raw data integrations and management, customer specific deliverables, original programming to produce needed calculations, and both data and statistical support of final analyses and report writing for projects such as the Nevada Dynamic Pricing Trial (NDPT)

Senior Economist, Advanced Service Delivery Project

October 2011 to July 2012

- Managed statistical sampling for U.S. Department of Energy reporting on metrics and recruitment
- Contributed to development of statistical design for analysis
- Managed data integrations needed for implementation of project

Staff Economist, Rates and Regulatory Affairs

October 2001 to August 2005

- Updated the Nevada Power Cost of Service Study as an input to rate cases
- Updated Customer Weighting Factor Study for Nevada Power and Sierra Pacific as an input to rate cases
- Supported all regulatory filings with testimony review and responses to data requests

Senior Economist, Rates and Regulatory Affairs

December 2000 to October 2001

- Developed Nevada Power Cost of Service Study as an input to rate cases
- Developed automated system for completing Customer Weighting Factor Studies

Other Related Employment

University of Nevada, Reno

May 2005 to August 2006

Research Associate

- Developed statistical programs for data management and analysis of 20 years of data to assess the Economic Value of Hiking for publication in a book chapter
- Developed survey instrument, data management from the survey, and econometric analysis related to wild horse adoption

Triangle Economic Research, Durham, NC

July 1997 to December 2000

Senior Economist, March 2000-December 2000

Economist, July 1997-March 2000

- Prepared preliminary estimate of recreational fishing damages from hazardous substance release using revealed preference data in a random utility model
- Estimated random utility models to determine expected catch using multiple methods, including non-parametric estimation and a multinomial logit estimation of catch (presented at American Agricultural Economics Association annual meeting)
- Developed and administered survey of recreational boaters; acquired survey research firm and validated data. Developed analysis plan for probit model of probability of site choice and conditional logit model of recreational benefits from restoration projects. Results were published with estimates of recreational benefits from proposed restoration projects using benefit transfer from other cases in Arizona Law Review
- Completed data collection, data management, econometric modeling and analysis, and report writing to estimate aggregate values of recreational activities using a nested price index, published in Environmental and Resource Economics

Prior Testimony Before Public Utilities Commissions

PUCN Docket Nos.: 15-07041, 15-07042, 16-06006, 17-06003, 17-06014, 17-06015, 18-08007, 18-10034, 19-02002, 19-04002, 19-06002, 20-06003, 21-09031, 21-09032, 22-06014, 22-09002, 22-09006, 22-11032, 23-02010, 23-02011, 23-06007, 23-08019, 24-02026, 24-02027, 24-05022, 24-05023, and 24-05041.

Education

University of Nevada, Reno

Master of Applied Economics and Statistics, August 1996

University of Manitoba, Winnipeg, Manitoba

Bachelor of Arts in Geography, June 1992

Continuing Education

NERA Marginal Cost Methodology for Electric Utilities

SAS Programming I and II

CORE Leadership Training

Six Sigma Green Belt Certification

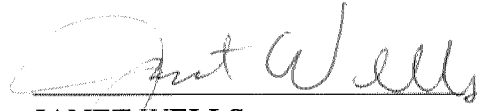
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AFFIRMATION

Pursuant to the requirements of NRS 53.045 and NAC 703.710, JANET WELLS, states that she is the person identified in the foregoing prepared testimony and/or exhibits; that such testimony and/or exhibits were prepared by or under the direction of said person; that the answers and/or information appearing therein are true to the best of her knowledge and belief; and that if asked the questions appearing therein, her answers thereto would, under oath, be the same.

I declare under penalty of perjury that the foregoing is true and correct.

Date: June 7, 2024


JANET WELLS

HANK WILL

1 **BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA**

2 Sierra Pacific Power Company d/b/a NV Energy
3 Docket No. 24-06____
4 Energy Supply Agreement with Callisto Enterprises, LLC

5 Prepared Direct Testimony of

6 **Hank Will**

7 **I. INTRODUCTION**

8 **1. Q. PLEASE STATE YOUR NAME, OCCUPATION, BUSINESS ADDRESS**
9 **AND PARTY FOR WHOM YOU ARE FILING TESTIMONY.**

10 A. My name is Hank Will. My current position is Pricing Specialist in the Regulatory
11 Pricing and Economic Analysis group for Sierra Pacific Power Company d/b/a NV
12 Energy (“Sierra” or the “Company”) and Nevada Power Company d/b/a NV Energy
13 (“Nevada Power” together with Sierra Pacific Power, the “Companies”). My
14 primary business address is 6100 Neil Road, Reno, Nevada. I am filing testimony
15 in this proceeding on behalf of Sierra.

16
17 **2. Q. PLEASE DESCRIBE YOUR BACKGROUND AND EXPERIENCE IN THE**
18 **UTILITY INDUSTRY.**

19 A. I have a Bachelor of Science Degree in Natural Resource Economics with minors
20 in Civil Engineering and Mathematics, and a Master of Arts in Economics from the
21 University of Nevada, Reno. I have been in my current position since joining the
22 Companies in July 2016. Prior to joining the Companies, I worked for a firm that
23 audited demand side management programs for utilities throughout the United
24 States. A more detailed description of my background and experience is included
25 in **Exhibit Will-Direct-1**.

1 3. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC
2 UTILITIES COMMISSION OF NEVADA (“COMMISSION”)?

3 A. Yes. I most recently provided testimony to the Commission in Sierra’s Gas General
4 Rate Case (“GRC”), Docket No. 24-02027 and the Companies’ advice letter filings
5 for approval of the Clean Transmission Tariff (“CTT”), Docket Nos. 24-05022 and
6 24-05023. A full list of cases in which I have provided testimony before the
7 Commission can be found in **Exhibit Will-Direct-1**.

8
9 4. Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

10 A. Sierra seeks approval of an Energy Supply Agreement (“ESA”) between Sierra and
11 Callisto Enterprises, LLC, a subsidiary of Google, LLC (“Google”) for purposes of
12 providing long-term electric service to Google’s facility under Sierra’s proposed
13 CTT rate schedule.¹ I support the ESA’s fixed long-term energy price and the
14 underlying pricing model. Janet Wells supports the terms and conditions in the ESA
15 and describes benefits to non-participating customers in her prepared direct
16 testimony.

17
18 My testimony is organized as follows:

19 **Section I.** Introduction; and

20 **Section II.** ESA Pricing and Modeling.

21
22 5. Q. PLEASE PROVIDE AN OUTLINE OF YOUR EXHIBITS.

23 A. I am sponsoring the following exhibits:

24 **Exhibit Will-Direct-1**, Qualifications of Hank Will.

25 **Exhibit Will-Direct-2**, ESA Pricing Model.

26
27 ¹Docket No. 24-05023, SPCC Advice Letter 674-E, Clean Transition Tariff.

1 **II. ESA PRICING AND MODELING**

2 **6. Q. PLEASE PROVIDE BACKGROUND FOR THE ESA PRICING MODEL**
3 **THAT YOU ARE SUPPORTING.**

4 A. The Company recently provided a sample ESA pricing model in the CTT advice
5 letter filing, Docket No. 24-05023. The ESA pricing model provided in **Will-**
6 **Workpapers-One** utilizes the ESA pricing model provided in Docket 24-05023.

7
8 **7. Q. PLEASE EXPLAIN THE PRICING MODEL’S FIXED ENERGY PRICE,**
9 **AS DEVELOPED FOR THE CTT.**

10 A. During the ESA period, Google will pay a fixed price per megawatt hour (“MWh”)
11 for the underlying resource’s clean generation energy that produces electricity to
12 be utilized for Google’s electric consumption. This fixed price is calculated by
13 modeling the electric consumption for Google against the annual revenue
14 requirement of an underlying clean generation project. The pricing model provides
15 the revenue requirement per MWh required from the underlying generation
16 resource and charges that price to Google.² Sierra will serve Google’s load from a
17 dedicated geothermal resource, Corsac Generating Station II (“CGS2”).³

18
19 In the following list, I detail the key components of the fixed price calculations and
20 how these components contribute to calculating the per MWh ESA price. A model
21 of how the fixed price is calculated is provided in **Exhibit Will-Direct-2** to this
22 application. An explanation of the ESA pricing model’s key inputs and the costs
23 that form the basis for the ESA price is provided here:

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26 _____
27 ² See Exhibit Will-Direct-2, worksheet named “Table 1: ESA Pricing”, lines 7, 9, and 17.

28 ³ The power purchase agreement for CGS2 is presented for approval in Docket No. 24-05041.

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- 1) **Resource and Grid MWh:** The CTT customer’s load is assigned in full or in part, on an hourly basis, to one of two predetermined categories, Geothermal or Grid MWh, based on the expected production of the underlying dedicated resource and Google’s expected hourly demand. Grid MWh represents the energy that exceeds the Geothermal output whereby Google’s load must be served by Sierra because the output of the underlying clean generation is insufficient to serve Google’s load in that hour.

- 2) **ESA Cost Input One – Annual Geothermal Cost:** The annual total cost of providing geothermal energy directly to the customer to meet its load. See the worksheet named “Table 2: ESA Pricing Cost Components” in **Exhibit Will-Direct-2**, lines 1 to 3.

- 3) **ESA Cost Input Two – Annual Grid Energy Capacity Cost:** The annual total cost for the capacity portion of the Long-Term Avoided Cost (“LTAC”) for the Grid served energy. See the worksheet named “Exhibit Table 2: ESA Pricing Cost Components” in **Exhibit Will-Direct-2**, lines 5 to 7.

- 4) **ESA Cost Input Three – Annual Planning Reserve Margin Cost:** The annual total cost for the planning reserve margin (“PRM”) held on behalf of this customer by the Company. In this case the PRM is reflected as 16 percent of the most recently approved generation functional revenue requirement divided by fully bundled MWh at the time consistent with the development of that functional revenue requirement. See the worksheet

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named “Table 2: ESA Pricing Cost Components” in **Exhibit Will-Direct-2**, lines 9 to 11.

5) **ESA Cost Input Four – Annual Capacity Protection Cost:** The annual cost of equalizing the effective per-MWh rate from the otherwise applicable class and the CTT customer’s effective per-MWh rate is included as the Annual Capacity Protection cost. See the worksheet named “Table 2: ESA Pricing Cost Components” in **Exhibit Will-Direct-2**, lines 13 to 15.

6) **Calculation of the ESA Price:** The calculation of the per MWh ESA price to be charged to the CTT customer as the sum of the annual total costs from items 2 through 5 divided by the annual geothermal MWhs. See the worksheet named “Table 1: ESA Pricing” in **Exhibit Will-Direct-2**, lines 10 to 14.

8. Q. HOW DOES THE COMPANY ASSIGN CLEAN GENERATION OR GRID STATUS TO EACH DELIVERED MWH?

A. To mirror how the Company will bill Google, in **Will-Workpapers-One**, delivered geothermal was priced at the power purchase agreement (“PPA”) price. For the purposes of the model in **Will-Workpapers-One**, the Company reviewed the geothermal production data for the underlying renewable resource, CGS2, proposed in the Companies’ 2024 Integrated Resource Plan (“IRP”). Google will pay the ESA price for all delivered geothermal energy on an hourly basis. If Google’s demand exceeds geothermal energy in a given hour, Google will pay, on the additional energy, the base tariff energy rate (“BTER”) and deferred energy

1 accounting adjustment (“DEAA”) rate as if Google were being served under the
2 otherwise applicable fully bundled rate schedule.

3
4 **9. Q. PLEASE EXPLAIN THE CAPACITY COST FOR ENERGY PROVIDED**
5 **DURING GRID HOURS.**

6 A. When the Company bills a CTT customer, the customer will receive credits applied
7 to all consumption and Time-of-Use (“TOU”) demand billing determinants that
8 reflect the cost of generation which is built into fully bundled rates.⁴ To add back
9 in capacity costs that are removed when applying the generation credits to grid
10 delivered energy, the Company has applied the cost of the capacity-only portion of
11 the calculated long term avoided cost (“LTAC”) to the grid delivered energy. The
12 LTAC is the incremental cost that the Company avoids by having to utilize one less
13 MW of generation capacity. For the pricing model, the Company utilized the 25-
14 year average of the capacity portion of the pending long-term avoided costs
15 presented for approval in the 2024 IRP.

16
17 **10. Q. WHY IS THE COMPANY INCLUDING THE ANNUAL COST FOR PRM**
18 **IN THE TOTAL ESA PRICE FOR CTT CUSTOMERS?**

19 A. The rate design structure for CTT customers includes credits for the overall
20 generation revenue that is embedded in fully bundled TOU demand and energy
21 rates. This allows for the customer to be excluded from the overall system costs of
22 generation and be served directly from the dedicated resource included in the ESA.
23 However, the loads of CTT customers are considered in the planning reserve
24 requirements of the system resulting in a cost to be paid by the customer. Thus, the

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27 ⁴ The generation credits will be applied to billing determinants based on energy from all sources including Geothermal
and Grid sources.

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PRM costs are incorporated into CTT customers' rate calculations. The current PRM value of 16 percent, from the most recently approved general rate case, was used in the calculations, and converted to a per MWh price. Using the estimated annual loads of the CTT customer, the annual cost is calculated and then spread to only the fixed ESA hours in order to add the cost to the fixed ESA price.

11. Q. WHY IS THE COMPANY ADDING [REDACTED] PER MWH IN ADMINISTRATION FEES TO THE GEOTHERMAL PPA PRICE COMPONENT OF THE ESA PRICE?

A. Complex contracts such as those contemplated in the CTT require additional resources allocated to billing support, administration, etc. above the otherwise applicable class. The administration fee component in rate design flows back to BTGR revenue requirement recovery. This is an additional benefit to non-participating customers that offsets any additional administrative costs incurred by the Company on behalf of CTT customers.

12. Q. PLEASE DESCRIBE THE CAPACITY PROTECTION COMPONENT OF THE ESA PRICE.

A. The Capacity Protection component of the ESA price is set such that the all-in effective rate for the CTT customer is no lower than the all-in effective rate of the otherwise applicable rate class. The Company accomplishes this through iterating the model until this constraint on the pricing model holds. The Capacity Protection is constricted to values equal to or greater than zero. This component is not applicable when the CTT customer chooses to sign an ESA with an ESA price greater than the all-in effective rate for the otherwise effective rate class because the CTT customer is opting into a higher cost clean resource compared to the

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overall costs for non-participating customers and no capacity protection is needed.
Thus, the capacity protection component of the ESA price in the present application
has been set to zero.

13. Q. DOES THIS COMPLETE YOUR PREPARED DIRECT TESTIMONY?

A. Yes.

EXHIBIT WILL-DIRECT-1

Hank D. Will
Pricing Specialist
RATES & REGULATORY AFFAIRS
NV Energy
6100 Neil Road
Reno, Nevada 89511-1137
(775) 834-3571

Mr. Will has been an employee of NV Energy since July 2016 and his time at the company has solely been within the Regulatory Pricing & Economic Analysis section of the Rates & Regulatory Affairs department. His current responsibilities are focused upon leading Sierra's Gas Cost Study and gas rate design, updating the Company's Time-of-Use Periods, Large Customer Market Price Energy ("LCMPE") support, support for the Company's electric vehicles dockets, providing inputs into the annual ten-year revenue forecast, and providing support for the Company's standby customers.

Prior to joining the Company, Mr. Will had experience as a project manager and lead evaluator for evaluation, measurement, and verification ("EM&V") of energy savings by demand side management programs ("DSM") implemented by the Company and other client utilities. He was most recently employed at ADM Associates, a contractor in the EM&V industry.

Employment History

NV Energy

July 2016 to Present

Pricing Specialist, Regulatory Pricing & Economic Analysis

Senior Pricing Analyst, Regulatory Pricing & Economic Analysis

July 2016 to Present

- Lead Sierra Gas Cost Study and gas rate design.
- Lead effort to revise and update Companies' time-of-use periods.
- Perform ESA pricing modeling for LCMPE and CTT related filings.
- Provide support for the Companies' Transportation Electrification Plan.
- Lead effort to update and revise Miscellaneous Charges Tariff.
- Updated the cost-based analysis for residential and commercial Non-Standard Metering charges.
- Updated the Nevada Power Rule 9 allowances in previous general rate cases.
- Created documentation that provides a guide to completing the Electric Facilities Study that serves as the model that outputs updated Rule 9 Allowances.
- Provided analyses for standby billing customers.
- Providing support of UI Planner model and inputs updates.

Non-NV Energy Employment

ADM Associates

August 2013 to July 2016

EM&V Evaluator

- Project manager and lead evaluator for EM&V for utilities demand side management programs.
- Wrote EM&V plans and reports for clients including NV Energy, FirstEnergy Ohio, and Public Service Oklahoma.
- Managed and performed field work to verify installation of energy efficiency measures.
- Performed energy efficiency analyses for numerous energy efficiency measures and programs.
- Provided data science support and analysis of interval smart meter data for determination of energy savings for energy efficiency programs that utilized treatment and control groups.

University of Nevada, Reno

March 2011 to May 2013

Graduate Research Assistant, Department of Economics

- Performed statistical modeling in STATA.
- Created a database of field data for grant funded research.

Education

University of Nevada, Reno

Master of Economics, May 2012.

University of Nevada, Reno

Bachelor of Science in Natural Resource Economics, May 2010.

Prior Testimony Before the Public Utilities Commission of Nevada

Docket No. 24-05023, Sierra Pacific Power Company Advice Letter 674-E CTT
Docket No. 24-05022, Nevada Power Company Advice Letter 547 CTT
Docket No. 24-02027, Sierra Pacific Power Company Gas General Rate Review Proceeding.
Docket No. 23-06007, Nevada Power Company General Rate Review Proceeding
Docket No. 23-02011, Sierra Pacific Power Company Advice Letter 662-E LCMPE
Docket No. 23-02010, Nevada Power Company Advice Letter 535 LCMPE
Docket No. 21-06014, Sierra Pacific Power Company General Rate Review Proceeding
Docket No. 20-06003, Nevada Power Company General Rate Review Proceeding
Docket No. 19-06002, Sierra Pacific Power Company General Rate Review Proceeding

Journal Article

Taylor, Michael H., Andrew J. Sanchez Meador, Yeon-Su Kim, Kimberly Rollins, and Hank Will, (2015). *The Economics of Ecological Restoration and Hazardous Fuel Reduction Treatments in the Ponderosa Pine Forest Ecosystem*. *Forest Science* 61(6), p. 988-1008.

EXHIBIT WILL-DIRECT-2

Exhibit WII-Direct-2
Docket No. 24-06__

SIERRA PACIFIC POWER COMPANY - d/b/a NV ENERGY

ESA PRICING MODEL FOR CALLISTO ENTERPRISES, LLC

Energy Supply Agreement Pricing Model

Docket No. 24-06XXX Direct Filing

PREPARED BY THE
REGULATORY PRICING AND ECONOMIC ANALYSIS DEPARTMENT

June 2024

THIS ESA PRICING MODEL WAS PREPARED TO SERVE AS THE
BASIS FOR THE FIXED ENERGY RATE IN DOCKET NO. 24-06XXX

Table 1: ESA Pricing

Line No.	Cost Components	Costs (\$)	Line No.
1	Geothermal Cost		1
2	Grid Energy Capacity Cost		2
3	Planning Reserve Margin Cost		3
4	Capacity Protection Cost		4
5	Total Annual Cost		5
6			6
7	Forecast Annual Energy (MWh)		7
8			8
9	Cost Components	Costs (\$/MWh)	9
10	Geothermal Cost		10
11	Grid Energy Capacity Cost		11
12	Planning Reserve Margin Cost		12
13	Capacity Protection Cost		13
14	ESA Offer Price >>		14
15			15
16			16
17			17
18			18

Table 2: ESA Pricing Cost Components

Line No.		Rate Component Calculation	Costs (\$)	Line No.
1	Component 1 Geothermal Cost	Total Geothermal (MWh)		1
2		Geothermal Price (\$/MWh)		2
3		Annual Geothermal Energy Cost		3
4				4
5	Component 2 Grid Energy Capacity Cost	Grid Energy (MWh)		5
6		Non-Geothermal Capacity Price (\$/MWh)		6
7		Annual Non Solar Capacity Cost		7
8				8
9	Component 3 Planning Reserve Margin	Planning Reserve Margin Energy (MWh)		9
10		Planning Reserve Margin Price (\$/MWh)		10
11		Annual Planning Reserve Margin Cost		11
12				12
13	Component 4 Capacity Protection	Capacity Protection Energy (MWh)		13
14		Capacity Protection Price (\$/MWh)		14
15		Total Capacity Protection Cost		15
16				16
17		Total Annual Cost		17
18				18
19				19
20				20

Table 3: Billing Determinants and Pricing

Line No.		Line No.
1		1
2	Customer Profile	2
3	Energy Served by Dedicated Resource (MWh)	3
4	Grid Energy (MWh)	4
5	Planning Reserve Margin Energy	5
6		6
7		7
8	Pricing	8
9	Geothermal Price (\$/MWh)	9
10	Non-Geothermal Capacity Price (\$/MWh)	10
11	Planning Reserve Margin Price (\$/MWh)	11
12	Capacity Protection Price (\$/MWh)	12
13		13

AFFIRMATION

Pursuant to the requirements of NRS 53.045 and NAC 703.710, HANK WILL, states that he is the person identified in the foregoing prepared testimony and/or exhibits; that such testimony and/or exhibits were prepared by or under the direction of said person; that the answers and/or information appearing therein are true to the best of his knowledge and belief; and that if asked the questions appearing therein, his answers thereto would, under oath, be the same.

I declare under penalty of perjury that the foregoing is true and correct.

Date: 6/6/24

Hank Will
HANK WILL

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BRIANA KOBOR

1 **BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA**

2 Sierra Pacific Power Company d/b/a NV Energy
3 Docket No. 24-06____
4 Energy Supply Agreement with Callisto Enterprises, LLC

5 Prepared Direct Testimony of

6 Briana Kobor

7 **A. INTRODUCTION**

8 **1. Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.**

9 A. My name is Briana Kobor. I am Head of Energy Market Innovation at Google
10 LLC (“Google”). My business address is 1021 S 400 W, Salt Lake City, Utah
11 84101.

12 **2. Q. PLEASE DESCRIBE YOUR EDUCATION AND EXPERIENCE.**

13 A. I have a Bachelor of Science degree in Environmental Economics and Policy
14 from the University of California, Berkeley, and I have been employed in the
15 utility regulatory industry since 2007. I was employed by MRW & Associates
16 LLC (“MRW”), a specialized energy consulting firm, for eight years. At MRW,
17 I focused on electricity and natural gas markets, ratemaking, utility regulation,
18 and energy policy development. I worked with a variety of clients including
19 energy policy makers, developers, suppliers, and end-users. My clients included
20 the California Public Utilities Commission, the California Energy Commission,
21 the California Independent System Operator, and several publicly owned utilities.
22 Following my employment at MRW, I worked at non-profit organization called
23 Vote Solar, where I analyzed the development and implementation of policy
24

1 initiatives related to distributed solar generation. I also reviewed regulatory
2 filings, performed technical analyses, and testified in commission proceedings
3 relating to distributed energy resources and renewable generation. In 2020 I
4 joined the energy team at Google where I manage regulatory and legislative
5 engagement related to energy issues and develop new solutions to meet Google's
6 electricity needs.

7
8 **3. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC**
9 **UTILITIES COMMISSION OF NEVADA ("PUCN" OR**
10 **"COMMISSION")?**

11 A. No. I have testified in proceedings before the Arizona Corporation Commission,
12 the California Public Utilities Commission, the Idaho Public Utilities
13 Commission, the Montana Public Service Commission, and the Utah Public
14 Service Commission. A full list of the testimony I have filed is provided in
15 **Exhibit Kobor -Direct 1.**

16
17 **4. Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?**

18 A. I am submitting this testimony on behalf of Callisto Enterprises, LLC. Callisto
19 Enterprises is a subsidiary of Google LLC, which is a subsidiary of Alphabet Inc.
20 ("Google").

21
22 **5. Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

1 A. My testimony reviews Google’s footprint in Nevada, describes Google’s
2 corporate clean energy objectives, and addresses how the Clean Transition Tariff
3 (“CTT”) Energy Supply Agreement (“ESA”) accelerates deployment of clean
4 firm capacity to advance Google’s corporate clean energy objectives while
5 protecting the interest of all Nevada ratepayers.

6
7

B. GOOGLE’S NEVADA PRESENCE

8 **6. Q. PLEASE DESCRIBE GOOGLE’S FOOTPRINT IN NEVADA.**

9 A. Google owns and operates two data centers in Nevada. Our first facility broke
10 ground in July 2019 and is located in Henderson, Nevada, in Nevada Power
11 Company’s (“Nevada Power”) service territory. Our second data center, in Storey
12 County, became fully operational in 2021 and is in the service territory of Sierra
13 Pacific Power Company (“Sierra” and jointly with Nevada Power, “NV Energy”
14 or “Company”). Between the Henderson and Storey County data center
15 campuses, Google has invested more than \$1.8B in infrastructure in the state of
16 Nevada.

17
18

**7. Q. WHAT IS A DATA CENTER, WHAT FUNCTIONS DOES IT SERVE, AND
19 WHY IS DATA CENTER GROWTH HAPPENING?**

20 A. Data centers are the engine behind the digital services that help people and
21 businesses thrive in today’s world. Google services like Google Cloud, Search,
22 Maps and Workspace (which includes Gmail, Docs, Sheets and more), as well as
23 its ongoing innovations in machine learning and artificial intelligence, are all

24
25

1 made possible by data centers. Our country is experiencing an increase in
2 economic growth and, as a result, demand for Google’s digital services is also
3 growing. As Google’s products and services continue to power the digital
4 economy, Google expects its infrastructure to also grow.

5 In a 2020 article, researchers from Lawrence Berkeley National Laboratory
6 characterized data centers as “the information backbone of an increasingly
7 digitized world.”¹ In the same article researchers found the following:

8 In 2018, we estimated that global data center energy use rose to 205
9 TWh, or around 1% of global electricity consumption. This
10 represents a 6% increase compared with 2010, whereas global data
11 center compute instances increased by 550% over the same time
12 period. Expressed as energy use per compute instance, the energy
intensity of global data centers has decreased by 20% annually since
2010, a notable improvement compared with recent annual
efficiency gains in other major demand sectors (e.g., aviation and
industry), which are an order of magnitude lower.²

13 By centralizing computing services into state of the art and highly efficient
14 facilities, data centers support the modern economy while making efficient use of
15 electricity.³

16
17 Data centers also support significant amounts of economic activity. This is
18 evidenced in a 2022 report from the Bureau of Economic Analysis which found
19 that, in 2020, “the U.S. digital economy accounted for \$3.31 trillion of gross
20

21 ¹ Available at https://datacenters.lbl.gov/sites/default/files/Masanet_et_al_Science_2020.full_.pdf, page 984.

22 ² Available at https://datacenters.lbl.gov/sites/default/files/Masanet_et_al_Science_2020.full_.pdf, page 985.

23 ³ In 2013, Lawrence Berkeley National Laboratory published research finding that: “if all U.S. business users
24 shifted their email, productivity software, and CRM software to the cloud, the primary energy footprint of these
25 software applications might be reduced by as much as 87%. In the interim decade since that study, cloud
migration had taken hold. Available at https://crd.lbl.gov/assets/pubs_presos/ACS/cloud_efficiency_study.pdf,
page 1.

1 output, \$2.14 trillion of value added (translating to 10.2 percent of U.S. gross
2 domestic product (GDP)), \$1.09 trillion of compensation, and 7.8 million jobs.”⁴
3 While these figures refer to the digital economy as a whole, data centers are a
4 critical component of that system and enabler of its growth and benefits.

5
6 As modern society continues to rely on data center services for applications
7 related to business operations, healthcare, safety, security, and more, Google
8 strives to provide the most efficient data centers in the industry. On average, a
9 Google data center is one-and-a-half times as energy efficient as a typical
10 enterprise data center. We achieve this through several complementary practices,
11 including raising the inside temperature to 80°F, using outside air for cooling,
12 and building custom servers. We also share detailed performance data to help
13 move the entire industry forward.⁵

14
15 **C. GOOGLE’S CORPORATE CLEAN ENERGY OBJECTIVES**

16 **8. Q. PLEASE DESCRIBE GOOGLE’S APPROACH TO CLEAN ENERGY.**

17 A. Electricity is the fuel that enables Google to serve its many users’ needs, around
18 the world and around the clock. As the tools and technologies available for clean
19 energy procurement and accounting have become more sophisticated over time,
20 so has Google’s approach to clean energy. Google first achieved its goal of being
21 carbon neutral in 2007 through the purchase of high-quality carbon offsets to

22
23 ⁴ Available at <https://www.bea.gov/system/files/2022-05/New%20and%20Revised%20Statistics%20of%20the%20U.S.%20Digital%20Economy%202005-2020.pdf>

24 ⁵ For more information see: <https://www.google.com/about/datacenters/efficiency/>

1 match its emissions. In 2010 Google signed its first Power Purchase Agreement
2 (PPA) for a wind resource in Iowa. In 2012, building on this experience, Google
3 announced its goal to match its global annual electricity use with 100% renewable
4 energy. When Google achieved that milestone in 2017, it was the first major
5 company to do so.

6
7 In 2020 Google announced its current initiative to go beyond 100% renewable
8 energy on an annual matching basis. In 2020, Google set a goal to run on 24/7
9 carbon-free energy (CFE) on every grid where it operates, which means matching
10 its electricity demand with clean energy generation where and when its electricity
11 consumption occurs. A core motivation for Google's efforts to achieve 24/7 CFE
12 by 2030 is to accelerate the decarbonization of entire electricity grids and
13 demonstrate that it is possible to operate major electricity-consuming facilities on
14 reliable, affordable, and clean electricity every hour of every day.

15
16 Inherent in Google's 24/7 CFE ambition, is a recognition that in order to fully
17 decarbonize the electricity sector, new technologies must be developed and
18 scaled. Intermittent renewable power sources such as wind and solar, while
19 critical pieces of the puzzle, are not sufficient. Research from leading academic
20 and international organizations shows that pursuing local and hourly matched
21 procurement leads to greater grid decarbonization and that procurement costs, as
22 well as overall system costs are reduced by the inclusion of clean firm generation

1 technologies.⁶ This finding is consistent with Google’s own internal modeling of
2 pathways to achieving its 24/7 CFE goal, which shows that advanced
3 technologies will reduce both the cost and lower the MW of nameplate capacity
4 needed when compared to a portfolio consisting only of variable, renewable
5 technologies and short duration battery storage.⁷

6
7 In order for Google to use its private capital to catalyze the development of these
8 critical new clean energy technologies, new business models and regulatory
9 structures must be developed and scaled. It is Google’s intention to build these
10 solutions in partnership with its utilities and to do so in a way that facilitates
11 access and benefits to all customers. As discussed in this testimony, the CTT is
12 one such new structure that will facilitate Google’s investment in new clean
13 energy technologies and solutions. The CTT creates an opportunity for customer
14 investments to accelerate innovations in the provision of clean firm capacity. In
15 the current context, where new capacity investment is needed, Google believes
16 the CTT will be instrumental in aligning customers, regulators, and utilities to
17 meet the development challenges of today without sacrificing climate ambitions.

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21 ⁶ Q. Xu, A. Manocha, N. Patankar, J. Jenkins, System-level Impacts of 24/7 Carbon-free Electricity Procurement,
Princeton University Zero-carbon Energy Systems Research and Optimization (ZERO) Laboratory (2021); I.
22 Riepin and T. Brown, System-level impacts of 24/7 carbon-free electricity procurement in Europe, Technical
University of Berlin (2022); International Energy Agency, Advancing Decarbonization through Clean Electricity
Procurement (2022).

23 ⁷ Available at [https://www.gstatic.com/gumdrop/sustainability/accelerating-advanced-clean-electricity-
24 technologies.pdf](https://www.gstatic.com/gumdrop/sustainability/accelerating-advanced-clean-electricity-technologies.pdf), page 7

1 Google believes that Nevada is a state that is leading in the transition to carbon
2 free energy. In 2021 Nevada passed legislation setting its goal to achieve 100%
3 carbon-free energy resources by 2050.⁸ And Google is proud of the innovation it
4 has accomplished, in partnership with NVE, to date. In 2019, as it was finalizing
5 its announcement of the 24/7 goal, Google executed an ESA with NV Energy to
6 support the Henderson data center. As part of that ESA, Google included
7 significant investment in battery storage, an arrangement that was unique for
8 inclusion in a corporate procurement at that time, and by sharing battery capacity
9 with NV Energy's other customers when most needed, resulted in critical system
10 benefits for all NV Energy's customers.⁹

11
12 Now, as Google considers additional investment in Nevada, to meet its 24/7 CFE
13 by 2030 objectives, there is a great opportunity to align Google's investments
14 with the needs of the Nevada grid. This opportunity has guided Google's
15 approach to the CTT ESA that is the subject of this application.

20 ⁸ SB 448 - NRS 704.471

21 ⁹ See December 29, 2020, Decision in Docket No. 19-12017 "First, the Commission finds the ESA in the public
22 interest and approves the ESA. The ESA includes a unique arrangement through which NPC will dispatch battery
23 storage to serve all customers during the time of year when it is most needed - during the summer evening hours.
The ESA is unique in its size and scale as well as its inclusion of a capacity sharing mechanism associated with
the storage resources. The ESA's arrangement for 350 MW of solar capacity is among the largest corporate solar
purchases ever, and the inclusion of 280 MW of battery storage is unprecedented in corporate procurement."
paragraph 121.

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9. Q. HOW IS GOOGLE’S STOREY COUNTY DATA CENTER SERVED WITH ELECTRICITY?

A. In Docket No. 20-10007 Google filed an application to enroll our Storey County site on Schedule No. LCMPE (Large Customer Market Price Energy), however the negotiation between NV Energy and Google failed to result in a long-term ESA. (See June 3, 2021, Withdrawal of Original Filing, Docket No. 20-10007.) With the withdrawal of the LCMPE ESA application for the Storey County site and the beginning of fully bundled service from NV Energy for the data center, Google became ineligible for service under LCMPE as that tariff is reserved for new customers of the utility. As will be addressed in full in Docket No. 24-05022 and 24-05023 the Clean Transition Tariff (proposed Schedule No. CTT) provides a critical tool for Google to make progress on its energy objectives in Nevada. Without the CTT and with the limitations on LCMPE, there is no clear pathway for Google to achieve its 24/7 CFE objectives in Nevada.

D. THE CLEAN TRANSITION TARIFF PROVIDES A NECESSARY PATH FOR EXISTING CUSTOMERS TO ACCELERATE SYSTEM DECARBONIZATION

10. Q. WHAT IS THE CLEAN TRANSITION TARIFF?

A. The Clean Transition Tariff (“CTT”) is a new tariff filed by NV Energy that is pending approval in Docket No. 24-05022 and 24-05023 It is based on a proposal originally made by Google in Sierra’s last general rate case (Docket No. 22-06014).

1 **11. Q. WHY DID GOOGLE PROPOSE THE CTT IN THE SIERRA GENERAL**
2 **RATE CASE?**

3 A. Google originally proposed the CTT in the Sierra general rate case because
4 Google believes it is critical to establish customer programs that create pathways
5 for companies to invest in technologies that facilitate full grid decarbonization
6 and accelerate the development of clean capacity solutions.

7
8 In developing the CTT, Google worked alongside NV Energy to identify new
9 clean energy resources that would complement NV energy's long-term resource
10 plan, while also enabling Google to make progress on its goal to be 24/7 CFE at
11 its Storey County data center. As Google witness Carolyn Berry testified in
12 Docket No. 22-06014, "Full grid decarbonization necessitates a holistic view that
13 marries grid operations, customer demand, and customer procurement. Existing
14 products for corporate customers generally seek to replace or match bundled
15 customer supply with a tailored portfolio of resources. As we move toward full
16 decarbonization, utilities must provide additional product pathways so that
17 growing customer demand for 24/7 is targeted toward strategic investments that
18 align with evolving grid dynamics. This will require a new approach that is
19 informed not only by the customer's needs but also the grid's needs. The Clean
20 Transition Tariff embodies these concepts."
21
22
23
24

1 **12. Q. HOW DID THE COMMISSION RESPOND TO GOOGLE’S PROPOSAL?**

2 A. The Commission acknowledged Google and the utility's willingness to pursue
3 discussions on the proposed CTT and instructed the company to conduct
4 additional discussions in accordance with Google's proposal.¹⁰
5

6 **13. Q. WHAT SUBSEQUENT STEPS FOLLOWED THE CONCLUSION OF**
7 **THE SIERRA GENERAL RATE CASE?**

8 A. As discussed further below, following the conclusion of the Sierra general rate
9 case, Google and NV Energy worked together on solutions, ultimately resulting
10 in the development of the CTT ESA proposed in this proceeding.
11

12 **E. GOOGLE'S PRIORITIES FOR THE DEVELOPMENT OF A CTT ESA WITH**
13 **NV ENERGY FOR ITS STOREY COUNTY DATA CENTER**

14 **14. Q. WHAT WERE GOOGLE’S PRIORITIES FOR DEVELOPMENT OF A**
15 **CTT ESA WITH NV ENERGY FOR ITS STOREY COUNTY DATA**
16 **CENTER?**

17 A. Google had three main priorities for development of the CTT ESA with NV
18 Energy: (1) Google’s CTT ESA should facilitate procurement in technologies that
19 accelerate grid decarbonization through the delivery of clean capacity; (2)
20 Google’s CTT ESA procurement should support state energy policy; and (3) any
21 and all premium costs associated with Google’s CTT ESA procurement should
22 be borne exclusively by Google.

23 _____
24 ¹⁰ See December 27, 2022 Decision on Docket No. 22-06014, paragraph 916.

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15. Q. PLEASE EXPLAIN WHY PRIORITIZING CLEAN CAPACITY WAS IMPORTANT TO GOOGLE.

A. While a large proportion of customer-specific clean energy procurement to date, including Google’s, has focused on the ability of resources to provide clean energy, to make progress on our goal to be 24/7 CFE by 2030, we must also focus on clean capacity. Intermittent renewable generation resources such as wind and solar play a critical role in the operation of a decarbonizing grid, but as penetration increases, the ability for these resources to provide significant capacity value is limited. Complementary development of li-ion battery storage improves the capacity value of these resources, but additional technologies are needed. Capacity consideration is critical as without meaningful investment in clean capacity, utilities will need to continue to rely on and invest in fossil-powered resources to maintain resource adequacy. Therefore, prioritizing clean capacity becomes essential for ensuring a reliable and sustainable electric system.

As a growing part of our national economy, Google is committed to creating the innovations in the electricity system that ensure that our growing load is catalytic towards the clean energy transition. The CTT provides that opportunity. Commensurate with the value that CTT investments provide to the grid, the CTT provides participating customers with credits against the full power value (energy

1 and capacity) in the bundled rate, thus incentivizing participating customers to
2 invest in clean capacity resources.¹¹
3

4 **16. Q. PLEASE EXPLAIN WHY IT WAS IMPORTANT TO PRIORITIZE**
5 **SUPPORT FOR STATE ENERGY POLICY.**

6 A. As stated, a core pillar of Google's efforts to achieve 24/7 CFE by 2030 is to work
7 in partnership to accelerate the decarbonization of entire electricity grids and lead
8 the industry by operating major electricity-consuming facilities on reliable,
9 affordable, and clean electricity every hour of every day. To meet the challenge
10 of grid decarbonization, while also meeting the needs of a growing economy, it
11 is critical that customer-specific procurement align with state energy goals, like
12 Nevada's. Under NRS 704.7821, the State of Nevada has a goal to achieve 100%
13 carbon-free energy resources by 2050. Any customer-specific procurement in
14 Nevada should complement the state's decarbonization trajectory. As a vertically
15 integrated utility, NV Energy is seeking to meet Nevada's own decarbonization
16 goals while maintaining resiliency and reliability of the grid. To ensure that
17 customer-specific procurement complements and accelerates decarbonization,
18 Google seeks to partner with our utilities to identify where opportunities exist for
19 customer-specific procurement to maximize benefits for the decarbonizing grid.
20
21

22 ¹¹ As described in the prepared direct testimony of Hank Will, the ESA rate methodology under the CTT ensures
23 that customers pay for any grid supplied capacity and fully cover the costs of NV Energy's Planning Reserve
24 Margin associated with their load.

1 17. Q. PLEASE DESCRIBE WHY IT WAS A PRIORITY FOR GOOGLE TO
2 COVER ALL PREMIUM COSTS ASSOCIATED WITH ITS CTT ESA
3 PROCUREMENT.

4 A. A robust public interest standard is a core principle in consideration of any special
5 contract or arrangement for an individual customer. The CTT ESA is no different.
6 NV Energy's integrated resource planning process focuses on procurement to
7 meet policy and reliability needs at least cost for the benefit of all ratepayers. To
8 the extent that Google's CTT ESA procurement seeks to accelerate
9 decarbonization with a focus on clean capacity, some CTT ESA portfolio costs
10 may come at a premium. Google seeks to fully cover any such premium costs
11 associated with a CTT ESA portfolio to prevent any potential undue cost shifting
12 to non-participating customers.

13
14 18. Q. DOES THE ESA THAT GOOGLE IS FILING JOINTLY WITH NV
15 ENERGY IN THE PRESENT DOCKET ALIGN WITH GOOGLE'S
16 THREE PRIORITIES?

17 A. Yes. As explained in more detail in the following section, the Google CTT ESA
18 embodies the priorities described herein.

19
20 **F. DESCRIPTION OF THE GOOGLE CTT ESA**

21 19. Q. HOW WAS THE GOOGLE CTT ESA DEVELOPED?

22 A. To inform ESA discussions with NV Energy and identify potential resources to
23 advance Google's earlier-described objectives, I reviewed Google's proprietary
24

internal dashboards that show estimates of the hourly clean energy profile of the Nevada grid in 2030. This information is compiled based on the generation resources on the grid today and those expected to be deployed based on utility resource planning filings. **Figure-Kobor-Direct-1** below shows Google’s Grid CFE “heatmap” for Nevada in 2030.

Figure-Kobor-Direct-1: Nevada CFE Heatmap, 2030

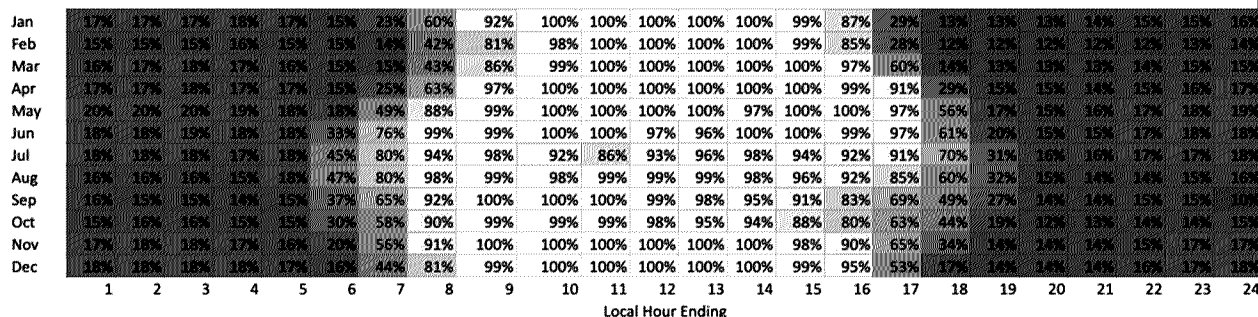


Figure 1 illustrates the estimated hourly percentage of clean energy on a 12-month x 24-hour basis. Hours indicated by darker shading, such as January in the Hour Ending 1:00, correspond to a lower percentage of estimated CFE, in this case 17%. Conversely, hours represented by lighter shading, have a higher percentage of estimated CFE, i.e., June in the Hour Ending 11:00 with 100% CFE.

20. Q. HOW DO YOU INTERPRET THE INFORMATION IN FIGURE 1?

A. The CFE heatmap provides a helpful high-level view of what the Nevada grid might look like in 2030. It relies on broad extrapolations from publicly accessible

1 data rather than a sophisticated resource planning model and therefore should be
2 interpreted as a directional tool, not a precise analysis. Looking at Figure 1, it is
3 clear that NV Energy's own build plans are expected to result in deep
4 decarbonization during the middle of the day, in the solar rich hours, but that non-
5 solar hours have significant room for improvement. As a fully bundled customer
6 of NV Energy, the heatmap demonstrates the possible CFE profile for Google's
7 Storey County data center in 2030, without the pursuit of customer-specific
8 procurement under the CTT ESA. According to Google's dashboards, with
9 bundled service from NV Energy, the Storey County data center may be
10 approximately 50% CFE on an hourly basis in 2030. This represents halfway
11 toward Google's goal of achieving 100% CFE on an hourly basis by 2030.
12

13 **21. Q. WHAT DID YOU CONCLUDE BASED ON THESE INDICATORS?**

14 A. These indicators were instrumental in guiding the procurement strategy for the
15 Storey County data center, allowing Google to build on the foundation of clean
16 energy provided by NV Energy's existing and planned resources as part of our
17 default bundled service. Incorporation of grid-CFE is fundamental to how Google
18 measures its progress towards its 24/7 CFE objectives. Figure 1 demonstrates that
19 it is expected that NV Energy will procure a fair amount of solar PV as part of
20 their business-as-usual operations and that additional PV procurement
21 specifically for Google would be less likely to accelerate decarbonization in
22 Nevada. It is also clear that to complement NV Energy's own clean energy
23 procurement, and to provide progress on Google's hourly CFE matching goals,
24

Google should look to explore clean energy resources capable of generating outside of solar-rich hours.

22. Q. HOW WERE THE RESOURCES FOR GOOGLE’S CTT ESA IDENTIFIED?

A. As described in detail in the prepared direct testimony of Dr. Carolyn Berry, enhanced geothermal systems (“EGS”) have the potential to provide numerous benefits to the Nevada grid.

The Corsac EGS project is also a resource with a complementary profile to the CFE heatmap shown in **Figure-Kobor-Direct-1** above. **Figure-Kobor-Direct-2** below shows a heatmap for the Corsac EGS project. In this figure, the percentages represent the percent of energy generated in relation to project nameplate capacity on a 12-month x 24-hour basis.

Figure-Kobor-Direct-2: Corsac Project Heatmap

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Jan	96%	97%	97%	97%	98%	98%	98%	99%	100%	100%	99%	99%	98%	96%	95%	94%	89%	90%	92%	94%	94%	95%	95%	96%
Feb	94%	94%	95%	95%	95%	96%	96%	98%	99%	99%	99%	98%	97%	95%	95%	93%	90%	86%	89%	91%	91%	92%	93%	93%
Mar	91%	92%	93%	93%	93%	94%	96%	99%	99%	98%	98%	97%	96%	94%	94%	94%	91%	83%	83%	86%	88%	89%	90%	90%
Apr	88%	89%	90%	90%	91%	92%	97%	97%	97%	97%	96%	95%	94%	93%	92%	89%	87%	82%	78%	81%	84%	85%	86%	87%
May	83%	84%	85%	86%	87%	92%	97%	96%	95%	93%	92%	90%	88%	87%	85%	84%	82%	78%	73%	74%	78%	80%	81%	81%
Jun	76%	78%	79%	81%	82%	90%	93%	91%	89%	86%	84%	81%	80%	79%	77%	76%	75%	72%	67%	65%	70%	73%	74%	75%
Jul	70%	72%	73%	75%	77%	83%	88%	85%	82%	79%	76%	73%	72%	71%	69%	68%	66%	64%	59%	58%	64%	66%	68%	69%
Aug	72%	74%	76%	77%	79%	81%	89%	88%	84%	80%	77%	74%	72%	70%	70%	70%	68%	64%	58%	63%	67%	69%	70%	71%
Sep	80%	81%	82%	83%	84%	85%	93%	96%	92%	87%	83%	80%	79%	78%	78%	77%	74%	66%	67%	72%	75%	77%	78%	79%
Oct	88%	89%	90%	91%	91%	92%	94%	98%	96%	94%	90%	88%	86%	86%	86%	84%	77%	75%	79%	82%	84%	85%	86%	87%
Nov	93%	94%	94%	95%	95%	95%	96%	99%	99%	97%	96%	93%	91%	91%	91%	88%	82%	85%	88%	90%	90%	91%	92%	93%
Dec	97%	98%	98%	98%	98%	99%	99%	99%	100%	99%	99%	99%	98%	97%	96%	94%	90%	93%	94%	95%	95%	96%	97%	97%

As you can see in **Figure-Kobor-Direct-2**, while there is some variation throughout the year, the Corsac EGS project is expected to provide significant

1 amounts of energy, operating at anywhere from 70-97% of nameplate, during the
2 hours in which the Nevada grid is expected to be most lacking in CFE generation.

3
4 In the course of our bilateral discussions, Google surfaced the Corsac EGS project
5 as a potential CTT ESA resource, and after consideration and diligence by NV
6 Energy, it was determined to be a viable resource for CTT ESA procurement. NV
7 Energy and Fervo entered into a Power Purchase Agreement (“PPA”) which has
8 been filed for approval as part of NV Energy’s 2024 Integrated Resource Plan in
9 Docket No. 24-05041.

10
11 **23. Q. WOULD NV ENERGY HAVE PROCURED THE CORSAC PROJECT**
12 **WITHOUT GOOGLE’S COMMITMENT UNDER THE CTT ESA?**

13 A. No. As described in the prepared direct testimony of Janet Wells, NV Energy has
14 indicated that without the Google CTT ESA, the enhanced geothermal resource
15 would not have been brought under the current integrated resource plan due to
16 concerns over cost.

17
18 **24. Q. HOW WAS THE PRICING FOR THE ENHANCED GEOTHERMAL PPA**
19 **TAKEN INTO CONSIDERATION IN DEVELOPMENT OF THE**
20 **GOOGLE CTT ESA?**

21 A. Due to the comparatively high pricing of the EGS PPA, it was critical to Google
22 that the CTT ESA provide for Google to assume all premium costs associated
23 with NV Energy entering into the enhanced geothermal PPA. Ensuring ratepayer
24

1 insulation from these premium costs was a top priority to Google and was
2 considered at every turn in the ESA discussions. The prepared direct testimony
3 of NV Energy witness Hank Will describes how the ESA rate was ultimately
4 derived.

5
6 **25. Q. DOES THE CTT ESA AND ASSOCIATED 115 MW GEOTHERMAL**
7 **PROJECT GET GOOGLE ALL THE WAY TO ITS 24/7 CFE BY 2030**
8 **GOAL FOR THE STOREY COUNTY DATA CENTER?**

9 A. No. While the Google CTT ESA proposed in this docket will enable Google to
10 make considerable progress toward our goal to be powered by 24/7 CFE by 2030
11 in Storey County, the ESA was scaled to match the output from the Corsac project
12 while minimizing the level of excess energy. Excess energy in this case is defined
13 as geothermal production in excess of Google's load that will be served under
14 Schedule No. CTT. This was designed to avoid shifting the burden of high-cost
15 new technology to other ratepayers. As Google's load may grow in excess of the
16 load served under Schedule No. CTT, additional demand will be offered standard
17 bundled service from NV Energy. Google expects that it may bring forward
18 additional ESAs for additional clean energy resources in future integrated
19 resource plans as it continues to grow in Nevada and makes progress on its clean
20 energy objectives.

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G. RECOMMENDATION

26. Q. **PLEASE SUMMARIZE YOUR RECOMMENDATION**

A. I recommend that the Commission find that the Google CTT ESA is in the public interest and approve Google’s service under Schedule No. CTT per the terms of the Google CTT ESA.

27. Q. **DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY?**

A. Yes.

EXHIBIT

KOBOR-DIRECT-1

Briana Kobor | Google

1021 S 400 W, Salt Lake City, UT 84101 | 385.444.8679 | bkobor@google.com

Professional Employment

Head of Energy Market Innovation
Google
Present

December 2021 to

- Develop new solutions to meeting Google's electricity needs across global footprint

Lead, Energy Markets and Policy, North America West
Google
2021

April 2020 to December

- Manage regulatory and legislative engagement related to energy issues across eleven western states
- Ensure that electricity supplying Google's data center footprint is reliable, affordable and clean

Regulatory Director
Vote Solar
2020

August 2015 to April

- Lead regulatory practice in four states (Arizona, Utah, Idaho and Montana), develop strategy to deploy in-house and external experts to maximize impact with limited resources
- Develop relationships with utilities and external stakeholders to further policy interests
- See regulatory interventions through from start to finish including scoping, discovery, analysis, testimony drafting, assisting legal counsel with preparation for hearing, sitting for cross-examination, assisting legal counsel in drafting of briefs and other filings before state-level commissions

Senior Associate
MRW & Associates, LLC
2015

April 2007 to August

- Develop and sponsor expert witness testimony for numerous clients to assist intervention in the utility regulatory process including investor-owned utility general rate cases, policy rulemakings, utility applications for power plant and transmission development, and other rate-related proceedings
- Build and maintain spreadsheet models to forecast utility rates and rate components tailored to client needs
- Create analytical models to assess generator production, profitability and electricity costs under a variety of regulatory and market scenarios and conduct pro forma analyses and technical assessments of infrastructure development in support of business decisions
- Provide analyses to investors and developers on the impact of laws, regulations, and procurement practices on potential sales of generation in various markets, assess current procurement progress, estimate pricing expectations for power sales, identify potential considerations that affect the marketability of project generation

Education

Bachelor of Science with Honors, Environmental Economics and Policy
University of California, Berkeley

August 2002 to December 2006

Prepared Testimony

- UPSC Docket No. 17-035-61
In the Matter of the Application of Rocky Mountain Power to Establish Export Credits for Customer Generated Electricity
Phase II Affirmative Testimony of Briana Kobor on behalf of Vote Solar. March 3, 2020.
- ACC Docket No. E-01933A-19-0028
Tucson Electric Power General Rate Case
Direct Testimony and Exhibits of Briana Kobor on behalf of Vote Solar. October 28, 2019.
- MPSC Case No. D2018.2.12
NorthWestern Energy General Rate Case
Cross-Intervenor Testimony of Briana Kobor on Behalf of Vote Solar and the Montana Renewable Energy Association. April 5, 2019.
- MPSC Case No. D2018.2.12
NorthWestern Energy General Rate Case
Corrected Direct Testimony and Exhibits of Briana Kobor on Behalf of Vote Solar and the Montana Renewable Energy Association. March 1, 2019.
- IPUC Case No. IPC-E-17-13
Application of Idaho Power Company for Authority to Establish New Schedules for Residential and Small General Service Customers with On-Site Generation
Rebuttal Testimony of Briana Kobor on Behalf of Vote Solar. January 26, 2018.
- IPUC Case No. IPC-E-17-13
Application of Idaho Power Company for Authority to Establish New Schedules for Residential and Small General Service Customers with On-Site Generation
Direct Testimony of Briana Kobor on Behalf of Vote Solar. December 22, 2017.
- ACC Docket No. E-04204A-15-0142 and E-01933A-15-0322
UNSE/TEP General Rate Case Phase 2
Phase 2 Surrebuttal Testimony of Briana Kobor on Behalf of Vote Solar. September 29, 2017.
- ACC Docket No. E-04204A-15-0142 and E-01933A-15-0322
UNSE/TEP General Rate Case Phase 2
Phase 2 Direct Testimony of Briana Kobor on Behalf of Vote Solar. May 19, 2017.
- ACC Docket No. E-01345A-16-0036
Arizona Public Service General Rate Case
Direct Testimony of Briana Kobor in Support of the Proposed Settlement Agreement on Behalf of Vote Solar. April 3, 2017.
- ACC Docket No. E-01345A-16-0036
Arizona Public Service General Rate Case
Direct Testimony of Briana Kobor on Behalf of Vote Solar. February 3, 2017.
- ACC Docket No. E-01933A-15-0322
Tucson Electric Power General Rate Case
Surrebuttal Testimony of Briana Kobor on Behalf of Vote Solar. August 25, 2016.
- ACC Docket No. E-01933A-15-0322
Tucson Electric Power General Rate Case
Direct Testimony of Briana Kobor on Behalf of Vote Solar. June 24, 2016.
- ACC Docket No. E-00000J-14-0023
In the Matter of the Commission's Investigation of Value and Cost of Distributed Generation
Rebuttal Testimony of Briana Kobor on Behalf of Vote Solar. April 7, 2016.
- ACC Docket No. E-00000J-14-0023
In the Matter of the Commission's Investigation of Value and Cost of Distributed Generation

- Direct Testimony and Exhibits of Briana Kobor on Behalf of Vote Solar. February 25, 2016.
- ACC Docket No. E-04204A-15-0142
UNS Electric, Inc. General Rate Case
Surrebuttal Testimony and Exhibits of Briana Kobor on Behalf of Vote Solar. February 23, 2016
- ACC Docket No. E-04204A-15-0142
UNS Electric, Inc. General Rate Case
Direct Testimony and Exhibits of Briana Kobor on Behalf of Vote Solar. December 9, 2015.
- CPUC Application A.14-11-003
SDG&E General Rate Case Phase 2
Testimony of Briana Kobor on Behalf of the Utility Consumers' Action Network Concerning Sempra's Revenue Requirement Proposals for San Diego Gas & Electric and SoCalGas. May 15, 2015.
- CPUC Application A.14-06-014
SCE General Rate Case Phase 2
Testimony of Briana Kobor on behalf of the Coalition for Affordable Streetlights Concerning SCE's Proposed Street Light Rates. March 13, 2015.

Selected Publications and Presentations

- Kobor, Briana. The Evolution of DG Compensation in the Intermountain West. Solar Power and Energy Storage Mountain West. February 2020.
- Kobor, Briana. The Continued Evolution of DG Compensation Across the States. Solar Power International. September 2019.
- Kobor, Briana. Are Separate Rates for DG Customers Justifiable? Public Utilities Fortnightly. December 2018.
- Kobor, Briana. Mandatory Residential Demand Charges: A Case Study from Arizona. Solar Power International. September 2017.
- Kobor, Briana. Arizona on Value of Solar: Turning Point for Distributed Energy. Public Utilities Fortnightly. March 2017.
- Kobor, Briana. Getting the Value of Solar Right. Solar Market Insight Conference. October 2016.
- Kobor, Briana. Utility Rate Cases: The DG Perspective. Arizona Energy Futures Conference. October 2016.
- Kobor, Briana. The Utility Business Model. NAACP Energy Justice Certification Program. June 2016.
- Kobor, Briana. Rate Design to Support the Distributed Energy Future. Arizona Energy at the Crossroads Conference. November 2015.
- Monsen, Bill and Kobor, Briana. California Rules Worry Out-of-State Generators. Project Finance Newswire, Chadbourne & Parke. May 2012.
- McClary, Steven C., Heather L. Mehta, Robert B. Weisenmiller, Mark E. Fulmer and Briana S. Kobor (MRW & Associates). 2009. Framework for Evaluating Greenhouse Gas Implications of Natural Gas-Fired Power Plants in California. California Energy Commission. CEC-700-2009-009.
- Mehta, Heather, Kobor, Briana, & Weisenmiller, Robert. California Plans a Carbon Diet. Project Finance Newswire, Chadbourne & Parke. January 2009.

AFFIRMATION

I, Briana Kobor, pursuant to NAC 703.710 hereby affirm that the foregoing prepared direct testimony was prepared by me or under my direction and is correct to the best of my knowledge.

Dated: June 6, 2024

/s/ Briana Kobor
BRIANA KOBOR

CAROLYN A. BERRY

1 **BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA**

2 Sierra Pacific Power Company d/b/a NV Energy
3 Docket No. 24-06____
4 Energy Supply Agreement with Callisto Enterprises, LLC

5 Prepared Direct Testimony of

6 Carolyn A. Berry

7 **A. INTRODUCTION**

8 **1. Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.**

9 A. My name is Carolyn A. Berry. I am a Principal with Bates White, LLC. My
10 business address is 2001 K Street NW, North Building, Suite 500, Washington
11 DC 20006.

12 **2. Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.**

13 A. I received a B.S. in economics and a B.A. in Spanish from the University of
14 Minnesota in Minneapolis, Minnesota, in 1986, and a Ph.D. in economics from
15 Northwestern University in Evanston, Illinois, in 1995. The details of my
16 background and experience are provided in **Exhibit-Berry-Direct-1**.

17
18 **3. Q. PLEASE SUMMARIZE YOUR PROFESSIONAL BACKGROUND.**

19 A. I am a Principal with the economic consulting firm of Bates White, LLC. I
20 specialize in regulatory issues, market design and analysis, and policy
21 formation in the energy industry, including advising on electric and gas market
22 initiatives and strategy. I have worked for over 25 years on electric utility
23 issues, including cost recovery, transmission access, market power, and
24

1 resource optimization. I have prepared economic analyses for regulatory
2 commissions and state agencies analyzing the effects of energy policy on
3 incentives and market outcomes. I recently filed testimony on behalf of the
4 Massachusetts Attorney General’s Office providing analysis of Electric Sector
5 Modernization Plans filed by the electric distribution companies in
6 Massachusetts. I am currently working on a fuel audit for an investor-owned
7 utility evaluating utility operations and optimization, and a newly
8 implemented tariff. I have testified at hearing before the Federal Energy
9 Regulatory Commission (“FERC”), state and provincial regulatory
10 commissions in California, Utah, Massachusetts, Nova Scotia, and the U.S.
11 District Court for the District of South Carolina. Through my career, I have
12 gained an appreciation of a variety of industry perspectives through my work
13 at a regulatory agency – FERC – at an investor-owned utility – Pacific Gas &
14 Electric Company – and as an economic consultant for both regulators and
15 regulated entities. Attached to this testimony is a copy of my curriculum vitae
16 that includes a complete list of my testimony.

17
18 **4. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC**
19 **UTILITIES COMMISSION OF NEVADA (“PUCN” OR**
20 **“COMMISSION”)?**

21 A. Yes. I have testified in the cost of capital and rate design phases of Docket
22 No. 22-06014, Sierra Pacific Power Company’s (“Sierra” or the “Company”)
23 General Rate Case (“GRC”); in Docket No. 22-09006, NV Energy’s Third
24

1 Amendment to the 2021 Joint Integrated Resource Plan; in the first and second
2 phases of Docket No. 22-11032, NV Energy’s Fourth Amendment to the 2021
3 Joint Integrated Resource Plan; in Consolidated Docket Nos. 23-02010/23-
4 02011, the Large Customer Market Price Energy (“LCMPE”) docket; and in
5 the Cost of Capital and Rated Design phases of Docket No. 23-06007, Nevada
6 Power Company’s GRC.

7
8 **5. Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?**

9 A. I am submitting this testimony on behalf of Callisto Enterprises, LLC. Callisto
10 Enterprises is a subsidiary of Google LLC, which is a subsidiary of Alphabet Inc.
11 (“Google”).

12
13 **6. Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

14 A. I have been asked to describe the Google Clean Transition Tariff (“CTT”)
15 Energy Supply Agreement (“ESA”). The resource that supports the Google
16 CTT ESA is an enhanced geothermal system (“EGS”). As such, I have been
17 asked to explain how an EGS resource operates, provide information on its
18 current stage of development, and describe its crucial role in ensuring a
19 reliable, sustainable resource mix for Nevada. Additionally, I will discuss the
20 impact of the CTT ESA on Sierra’s customers.

1 **B. THE GOOGLE CTT ESA**

2 **7. Q. HAVE YOU REVIEWED THE GOOGLE CTT ESA AND THE**
3 **UNDERLYING POWER PURCHASE AGREEMENT (“PPA”) BETWEEN**
4 **NV ENERGY AND FERVO?**

5 A. Yes. I have reviewed a copy of the CTT ESA and a copy of the underlying
6 redacted PPA between NV Energy and Fervo.

7
8 **8. Q. PLEASE PROVIDE A SUMMARY OF THE BASIC PROVISIONS IN THE**
9 **GOOGLE CTT ESA.**

10 A. The Google CTT ESA has a term of 15 years aligned to a 15 year PPA between
11 NV Energy and Fervo Energy for 115 MW of EGS from the Corsac Project in
12 Northern Nevada. The Corsac Project is expected to come online in 2030.
13 Under the terms of the ESA, when the Corsac Project becomes operational,
14 Google would transition its load to service under Schedule No. CTT and
15 continue service under the CTT through 2044. Any load above and beyond the
16 CTT load would continue to be served fully bundled on the otherwise
17 applicable rate (“OAR”).

18
19 For load under Schedule No. CTT, Google would receive credits on their bill
20 for the embedded energy and capacity costs in NV Energy’s OAR and would
21 pay a premium CTT Energy Rate for energy and capacity from the Corsac
22 Project. The testimony of Hank Will describes how the CTT Energy Rate was
23 developed and provides the underlying model.

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9. Q. WHAT KIND OF NON-PARTICIPATING RATEPAYER PROTECTIONS ARE BUILT INTO THE GOOGLE CTT ESA?

A. There are two primary tools for ratepayer protection in the Google CTT ESA. First, the ESA is constructed to ensure that Google bears the full premium costs associated with all output under the Corsac PPA. This is accomplished through the construction of the CTT Energy Rate as well as through the provisions for treatment of energy above that provided by the Corsac Project and potential energy from the Corsac Project that is above Google’s load. Taken together, regardless of Google’s future energy use, Google has committed to paying for the full premium cost of the Corsac PPA.

Second, the ESA is constructed to ensure that the credits Google receives for embedded energy and generation capacity costs do not exceed the load matched to the CTT resource under the ESA. This is accomplished through the terms of the CTT ESA which indicate if the Corsac project is not generating sufficient energy to supply Google’s load Google will pay for energy based on the OAR at the Base Tariff Energy Rate (“BTER”) and Deferred Energy Accounting Adjustment mechanism (“DEAA”). This is also ensured through the provision that if Google’s load grows beyond that contemplated in the ESA, additional load will be served at the full OAR and will not be provided with credits against bundled energy and capacity costs under the CTT.

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Taken together these terms provide robust assurances that ratepayers will not be on the hook for any premium costs associated with the Google CTT ESA.

10. Q. HOW SHOULD THE COMMISSION CONSIDER THE GOOGLE CTT ESA IN THE CONTEXT OF THE CTT MORE BROADLY?

A. Google’s CTT resource supplies the load for Google that would otherwise have been served as part of the standard resource mix. This frees up existing and to-be-acquired capacity for use by other customers. Meanwhile, investment in new developing clean energy technologies that are early on their learning curves will expand the knowledge base and potentially drive down the costs of future investments. Thus, future investments by the utility in CFE critical to fill the clean energy gap may be less costly because of initial privately funded investments such as Google’s. Investments in next generation clean energy technologies will also expand the amount of solar, wind, and other clean intermittent resources that can be added to the system when these resources have the flexibility to shift output to complement intermittent output providing, in aggregate, new clean firm capacity. I discuss the EGS resource in the ESA that provides both learning curve cost reductions and flexibility benefits further below.

1 C. THE VALUE OF EGS AND HOW THE ESA ADVANCES THIS NEW
2 TECHNOLOGY

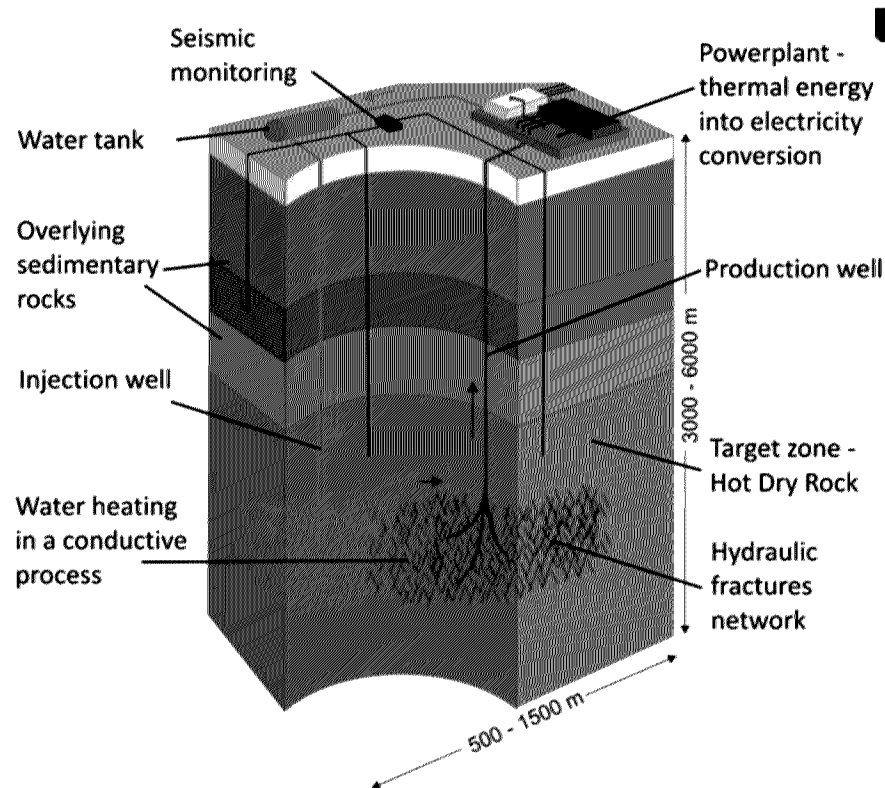
3 11. Q. WHAT IS AN EGS AND HOW IS IT DIFFERENT FROM
4 CONVENTIONAL GEOTHERMAL?

5 A. EGS is a next generation geothermal technology that involves the creation of
6 man-made reservoirs in hot dry impermeable rock. This approach differs
7 significantly from conventional geothermal projects which rely on naturally
8 occurring subsurface reservoirs that are much more limited geologically. EGS
9 can be engineered wherever there is hot rock at accessible depths vastly
10 expanding the potential for geothermal energy. Geothermal heat resources
11 have been estimated to be more than 5 terawatts in the U.S. alone, enough to
12 meet the electricity needs of the entire world. ¹ Deployment of EGS increases
13 the potential to capture those resources.

14 A basic EGS system consists of at least two deep wells about 2 - 3.5 miles
15 deep, connected by a network of fractures created in the rock layer. Water is
16 pushed into the injection well, is heated as it passes through the fractured rock
17 layer, and then is extracted through the production well and used to drive a
18 turbine to generate electricity. The water is recirculated back into the injection
19 well to support continuous energy extraction. **Figure-Berry-Direct-1** depicts
20 the basic system.

21
22
23 ¹ DOE Analysis Highlights Opportunities to Expand Clean, Affordable Geothermal Power, January 5,
24 2023. Available at: <https://www.energy.gov/eere/articles/doe-analysis-highlights-opportunities-expand-clean-affordable-geothermal-power>.

1 **Figure-Berry-Direct-1. Principal of operation of an enhanced doublet**
2 **geothermal system²**



16 **12. Q. WHAT IS THE VALUE PROPOSITION FOR EGS?**

17 A. Traditional geothermal projects typically run as baseload generation. EGS
18 also provides baseload capabilities and expands beyond that to load-following
19 and long-duration energy storage. This significantly increases the value of
20 EGS because with ever increasing intermittent resources on the grid, it can be
21 operated to avoid hours that are already supplied by solar or wind, and produce

22 _____
23 ² Moska, R.; Labus, K.; Kasza, P. Hydraulic Fracturing in Enhanced Geothermal Systems—Field, Tectonic and
24 Rock Mechanics Conditions—A Review. *Energies* 2021, 14, 5725. Available at:
25 <https://doi.org/10.3390/en14185725>.

1 electricity in hours lacking clean energy supply. The variable energy
2 production is achieved by restricting outflow from the production well and
3 allowing pressure (potential energy) to build in the reservoir which is released
4 to produce electricity at a future point in time.³

5
6 In addition to being clean, firm, and flexible, EGS requires a small land
7 footprint, does not require additional energy, has a secure supply chain, and
8 can draw workers and skill sets from the oil and gas sector.⁴ All these
9 attributes make EGS a frontrunner in the race to develop economically viable
10 CFE resources.

11
12 **13. Q. WHERE ARE TECHNOLOGICAL ADVANCES POSSIBLE WITH**
13 **RESPECT TO EGS?**

14 A. Advancements in drilling and stimulation technologies can dramatically
15 reduce cost and expand EGS potential, similar to advancements made in the
16 oil and gas industry. The National Renewable Energy Laboratory’s (“NREL”)
17 Annual Technology Baseline (“ATB”) analysis predicts a significant decline
18 in capital expenditures (“CAPEX”), fixed operation and maintenance
19
20

21 ³ See, Wilson, R.; Voller, K.; Galban, G; Norbeck, J.; Jenkins, J. The role of flexible geothermal power in
22 decarbonized electric systems. *Nature Energy*, January 2024, p. 3. Available at: <https://doi.org/10.1038/s41560-023-01437-y>. Also See, United States Department of Energy, “Pathways to Commercial Liftoff: Next-Generation
23 Geothermal Power.” March 2024. Referred to herein as “DOE Pathways Report”. Available at:
<https://liftoff.energy.gov/next-generation-geothermal-power/>

24 ⁴ DOE Pathways Report, p. 13.

1 (“O&M”), and LCOE by 2035 in its moderate and advanced technology
2 innovation scenarios.⁵
3

4 **14. Q. WHAT IS THE POTENTIAL FOR EGS IN NEVADA?**

5 A. The western U.S. has a high potential for the development of EGS because
6 higher temperature rock can be found at shallower levels. With innovations in
7 drilling and reservoir stimulation technologies, EGS will likely spread to other
8 parts of the country as the industry expands. Given Nevada’s geological
9 competitive advantage, it is uniquely positioned to be a leader in the EGS
10 space. This fact is depicted in **Exhibit-Berry-Direct-2**, which shows the
11 favorability of deep enhanced geothermal systems across the entire state of
12 Nevada.
13

14 **15. Q. HAS THE COMMISSION DEMONSTRATED INTEREST IN**
15 **GEOHERMAL ENERGY'S POTENTIAL FOR DECARBONIZATION**
16 **IN THE STATE?**

17 A. Yes. In its decision on NV Energy’s 5th Amendment to its 2021 IRP, the
18 Commission directed the Company to provide updates on geothermal
19 resources, specifically emphasizing the Valmy region, due to its role in
20 advancing decarbonization efforts.⁶
21
22

23 ⁵ Annual Technology Baseline, NREL, Geothermal. Available at: <https://atb.nrel.gov/electricity/2023/geothermal>.

24 ⁶ Commission Order, Docket 23-08015, March 1, 2024, pp. 98-99, 149.

1 **16. Q. ARE THERE OTHER BENEFITS TO ADDING EGS TO NV ENERGY'S**
2 **RESOURCE PORTFOLIO?**

3 A. Yes. Adding EGS to NV Energy's resource portfolio will provide resource
4 diversity, reduce fuel supply risks, and increase the overall reliability of the
5 system.

6
7 **17. Q. IS EGS SUPPLYING ELECTRICITY TO THE NV ENERGY SYSTEM**
8 **NOW?**

9 A. Two years ago, Google partnered with clean-energy startup Fervo on the
10 world's first corporate agreement to develop a 3.5-MW enhanced geothermal
11 power project. In November 2023, that project became operational and began
12 supplying electricity to NV Energy's system. The CTT ESA builds upon this
13 early-stage partnership and the lessons learned to deliver more EGS megawatts
14 for the benefit of the NV Energy system.

15
16 **18. Q. HAVE THERE BEEN OTHER EGS DEVELOPMENTS?**

17 A. Yes. Fervo is developing a 400 MW EGS project in southwest Utah projected
18 to start operations in 2026. As of February this year, Fervo reports a 70%
19 learning-based reduction in drilling time relative to its prior demonstration
20 project.⁷ This is a critical development because drilling time and associated

21
22

⁷ FERVO Energy Drilling Results Show Rapid Advancement of Geothermal Performance, February 12,
23 2024. Available at: <https://fervoenergy.com/fervo-energy-drilling-results-show-rapid-advancement-of-geothermal-performance/>

1 costs constitute a major proportion of expenditures required to develop new
2 EGS. Also, in May 2024, the Utah Frontier Observatory for Research in
3 Geothermal Energy (FORGE) at the University of Utah successfully
4 stimulated and circulated water through an injection well, hydraulically
5 fractured rock, and a sister production well with an efficiency rate of about
6 70% recovery.⁸ These developments show technological learnings and cost
7 reductions on EGS are happening in real time.

8
9 **19. Q. WHAT ARE THE U.S. DEPARTMENT OF ENERGY’S (“DOE”) GOALS**
10 **FOR EGS?**

11 A. In September 2022, DOE set a new goal to cut the cost of EGS by 90% to
12 \$45/MWh by 2035. In DOE’s view, EGS holds enormous potential as a nearly
13 inexhaustible source of heat to provide reliable, clean power. Capturing even
14 a small percentage of this potential would go a long way toward achieving net-
15 zero emissions across the U.S. by 2050.⁹

16
17 **20. Q. WILL DOE’S GOALS AND FUNDING BE SUFFICIENT TO ESTABLISH**
18 **NEW TECHNOLOGIES SUCH AS EGS?**

19 A. No. While DOE aims to accelerate research and development and to achieve
20 breakthroughs in technology to establish the viability of new CFE

21
22 ⁸ Utah FORGE Successfully Completes Stimulation and Circulation Test, Renewable Energy Magazine, June 6,
2024. Available at: https://www.renewableenergymagazine.com/geothermal/utah-forge-successfully-completes-stimulation-and-circulation-20240529?utm_medium=email

23 ⁹ See, “DOE Launches New Energy Earthshot to Slash the Cost of Geothermal Power”, September 8, 2022.
24 Available at: <https://www.energy.gov/articles/doe-launches-new-energy-earthshot-slash-cost-geothermal-power>.

1 technologies, new business models and regulatory structures are needed to
2 facilitate drawing in capital from the private sector that can accelerate
3 translating these concepts into reality by constructing operational projects in
4 the field. It is through this practical implementation and “learning by doing”
5 that reductions in cost can render new technologies economically feasible in a
6 faster time frame.

7
8 **D. THE GOOGLE CTT ESA IS IN THE PUBLIC INTEREST**

9 **21. Q. WILL THERE BE ANY COST-SHIFTS TO CUSTOMERS UNDER THE**
10 **ESA?**

11 A. No. The ESA rate is set to recover the full costs of the EGS resource. All
12 energy from the EGS resource will flow to Google. The EGS resource is more
13 expensive than the OAR, but Google is willing to assume the risk and pay the
14 high cost of this EGS energy to advance its 24/7 clean energy goals and support
15 Nevada in furthering its sustainability objectives. Also, Google load above the
16 load contemplated in the ESA will continue to pay the OAR with no credits or
17 price adjustments. Please see the testimony of Google witness Briana Kobor
18 for specific information on how the Google CTT ESA was developed.

19
20 **22. Q. ARE THERE ANY RISKS TO CUSTOMERS IF THE PROJECT**
21 **EXPERIENCES A COST-OVERRUN OR FAILS TO COME ONLINE?**

22 A. No. Customers are fully protected. NV Energy has entered into a PPA with
23 Fervo to purchase the output of the EGS resource at a negotiated price. The
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ESA price fully recovers the PPA price. There are provisions built into the PPA and ESA that protect customers if the cost of the EGS resource is higher than expected, or the EGS project is abandoned. If the project fails, the ESA will be voided, penalties will apply and accrue to NV Energy, and Google will revert to a fully bundled customer.

23. Q. WILL THE ESA BENEFIT NEVADA?

A. Yes. There is huge potential for EGS in Nevada. Gigawatts of EGS could potentially be developed in the state, making Nevada a geothermal hub in the West. Due to the current high cost of EGS, NV Energy would not request approval on behalf of this resource of its customers in the present IRP. The Google ESA provides an opportunity for Nevada to be a first-mover in a very promising growth area with potentially enormous benefits.

24. Q. IS THE ESA IN THE PUBLIC INTEREST?

A. Yes, for all of the reasons discussed herein.

25. Q. DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY?

B. Yes.

EXHIBIT

BERRY-DIRECT-1

CAROLYN A. BERRY, PHD

Principal

AREAS OF EXPERTISE

- Energy policy and strategy
- Market design and analysis
- Market power and mitigation
- Regulatory and tariff analysis
- Cost allocation
- Gaming and manipulation



SUMMARY OF EXPERIENCE

Carolyn Berry is an economist with the Energy Practice. She specializes in market design and analysis, incentives and competition, policy formation, and regulatory issues in the energy industry, including collaborating and advising on electric and gas market initiatives and strategy. She has a proven track record as an expert witness in litigated proceedings and in achieving settlement with adverse parties. Dr. Berry has extensive experience leading and collaborating with key players in the California electricity and natural gas markets on issues related to the 2000-2001 energy crisis, the market structure and incentives that contributed to scarcity of supply, and options to redesign the markets.

Dr. Berry has prepared testimony, directed and performed technical analyses, and provided policy recommendations on a wide array of issues: electricity market design, mergers and acquisitions, rate determination, gaming and manipulation in electricity and natural gas markets, financial ring-fencing, utility cost recovery, value of distributed energy resources, rate forecasting, cost-allocation mechanisms, contract evaluation, and damages calculations. Additionally, she has worked with domestic and international clients on energy market issues such as decoupling, uplift costs, avoided costs, virtual bidding, gaming strategies in centralized auctions, transmission pricing, optimal allocation of transmission rights, and retail electricity markets. She also has extensive experience with the Federal Energy Regulatory Commission, having worked on a wide variety of topics, including deregulation of wholesale electricity markets, market monitoring, mergers, cost recovery, and rate determination.

EDUCATION

- PhD, Economics, Northwestern University
- BS, Economics, University of Minnesota
- BA, Spanish, University of Minnesota

PROFESSIONAL EXPERIENCE

- Bates White Economic Consulting, Washington, DC
 - Principal, 2017–present
- Pacific Gas and Electric Company, San Francisco, CA
 - Manager, Energy Policy and Procurement, 2014–2017
- Private Economic Consultant, Washington, DC
 - Owner, 2002–2014
- National Economic Research Associates (NERA), Washington, DC
 - Senior Consultant, 2000–2002
- Federal Energy Regulatory Commission, Washington, DC
 - Senior Economist, 1994–2000
- Universitat Pompeu Fabra, Barcelona, Spain
 - Assistant Professor, Facultat De Ciències Econòmiques, 1992–1993
- Northwestern University, Evanston, Illinois
 - Lecturer, 1989–1992

SELECTED BUSINESS AND CONSULTING EXPERIENCE

- On behalf of a private U.S. client, analyzed value of a transmission right-of-way applying revenue and avoided cost methods.
- On behalf of a private U.S. client, analyzed value of interregional transmission and its impact on reliability and resiliency.
- On behalf of Vote Solar, performed an analysis of the value of solar in Rocky Mountain Power's service territory in the state of Utah.
- On behalf of the California Parties, a group of investor-owned utilities and state agencies, led team in a multi-year process to value and resolve all remaining California energy crisis amounts working with the California Independent System Operator, the California Power Exchange, and affected third party market participants.
- On behalf of a Canadian client, performed an audit of dispatch costs of Nova Scotia Power.
- On behalf of a South Carolina regulatory client, co-authored a white paper on the topic of the securitization as used in the utility industry.
- On behalf of the South Carolina State Senate, provided an analysis of an interim reduction in the rates to exclude costs associated with the abandoned V.C. Summer nuclear plant, that could be sustained by South Carolina Electric & Gas without significantly increasing the likelihood of insolvency.
- On behalf of a Canadian client, provided survey of price formation under market rules that constrain auction-based market-clearing prices.
- On behalf of the California Parties, a group of investor-owned utilities and state agencies, led teams to develop energy crisis settlement valuations. Represented the Parties in settlement negotiations requiring the development of creative approaches to issue resolution and consensus building.

- Provided analysis of electric utility energy procurement issues including distributed energy resource interconnection issues.
- Determined just and reasonable rates for electric energy and ancillary services sales in the California ISO and PX markets. Process required analysis of ISO and PX market rules and tariffs, FERC orders, and the Federal Power Act.
- Conducted analysis of market power and market manipulation in the California and WECC electric markets through bidding strategies, energy and transmission scheduling practices, and Enron gaming strategies. Submitted written testimony and presented at FERC hearings.
- Analyzed and determined costs for sales of energy and ancillary services of sellers in the California ISO and PX markets. Provided analysis of natural gas purchases and trading, emissions regulations and costs, energy purchasing in the WECC, transmission costs, risk, and opportunity costs.
- Conducted survey of revenue decoupling in the US natural gas and electricity markets.
- Provided recommendations on the applicability and suitability of cost-of-service pricing in developing countries.
- For a US client, prepared independent report on uplift costs associated with virtual bidding in US organized electricity markets and analyzed alternative costs allocation methodologies.
- Analyzed the removal of electric transmission capacity in the Pacific Northwest from the California ISO-controlled grid. Identified various inefficiencies and gaming opportunities that arise when electric transmission is governed by different sets of rules.
- Provided analysis of but-for pricing for a New Zealand client to determine the allocation of costs for transmission investment in the PJM markets.
- Provided assistance to the Brazilian National Electricity System Operator (ONS) in the development of economically efficient methods of procuring ancillary services compatible with the Brazilian electricity market. Examined the feasibility of market-based provision of ancillary services in the electric sector and prepared a proposal for the commercialization of these services.
- Prepared a report containing recommendations on institutional strengthening for ANEEL, the federal electricity regulator in Brazil.
- Analyzed the initial proposals for the creation of the PJM, New England, and California ISOs and the associated market restructuring.
- Analyzed the competitive effects of the competitive effects of the 1997 merger of Duke Power Company and PanEnergy Corporation that formed Duke Energy Corporation.
- Analyzed the competitive effects of the competitive effects of the 1995 merger of Southwestern Public Service Company and Public Service Company of Colorado.
- Worked in the Office of Economic Policy at FERC during the crafting of FERC Order 888, the formation of the eastern and California ISOs, and the revision of merger policy.

TESTIFYING EXPERIENCE

- March 5, 2024 Commonwealth of Massachusetts Department of Public Utilities. Joint Direct Testimony of Carolyn A. Berry and Charlie Fijnvandraat on behalf of The Office of the Attorney General. *Regarding:* Electric Sector Modernization Plans with a focus on demand forecasting, net benefits calculations, and reliability and resilience plans for Eversource, National Grid and Unitil.
- September 11, 2023 Nova Scotia Utility and Review Board (NSUARB). Testimony before the NSUARB on behalf of the Staff of the NSUARB. *Regarding:* Unit commitment and dispatch of Nova Scotia Power, Inc. (NSPI) generating assets as part of biannual audit of the NSPI Fuel Adjustment Mechanism proceeding.
- September 1, 2023 Nevada Public Utilities Commission. Testimony of Carolyn A. Berry, Ph.D., on behalf of Google, LLC in Nevada Power Company's General Rate Case. *Regarding:* Fuel and purchased power recovery mechanism, return on equity, and participation in regional transmission organizations.
- July 14, 2023 Nevada Public Utilities Commission. Testimony of Carolyn A. Berry, Ph.D., on behalf of Google, LLC in Nevada Power Company's General Rate Case. *Regarding:* Large Customer Market Priced Energy tariff and the transition to clean energy.
- March 17, 2023 Commonwealth of Massachusetts Department of Public Utilities. Joint Surrebuttal Testimony of Carolyn A. Berry, Nicholas Puga, and Vincent Musco on behalf of The Office of the Attorney General. *Regarding:* project costs, pre-approval of costs, and project selection.
- March 17, 2023 Nevada Public Utilities Commission. Testimony of Carolyn A. Berry, Ph.D., on behalf of Google, LLC. *Regarding:* 2021 Integrated Resource Plan Amendment Four, Phase II, addressing integrated resource planning process, modeling, and practices.
- February 17, 2023 Commonwealth of Massachusetts Department of Public Utilities. Joint Direct Testimony of Carolyn A. Berry, Nicholas Puga, and Vincent Musco on behalf of The Office of the Attorney General. *Regarding:* NSTAR Electric Company and Eversource Gas Company of Massachusetts petitions to develop, construct, own, and operate solar photovoltaic facilities paired with battery energy storage on Company-owned property in environmental justice communities.
- January 30, 2023 Nevada Public Utilities Commission. Testimony of Carolyn A. Berry, Ph.D., on behalf of Google, LLC. *Regarding:* 2021 Integrated Resource Plan Amendment Four, approval of Silverhawk CTs.
- January 10, 2023 Nevada Public Utilities Commission. Testimony of Carolyn A. Berry, Ph.D., on behalf of Google, LLC. *Regarding:* Regulatory asset for regional transmission organization (RTO) activities.
- October 11, 2022 Nevada Public Utilities Commission. Testimony of Carolyn A. Berry, Ph.D., on behalf of Google, LLC. *Regarding:* Rate design, and a proposed new Clean Transition Tariff.

- September 7, 2022 Nevada Public Utilities Commission. Testimony of Carolyn A. Berry, Ph.D., on behalf of Google, LLC. *Regarding:* The sharing of fuel and purchased power price risk between the electric utility and customers.
- March 2, 2021 Public Utility Commission of Texas. Testimony of Carolyn A. Berry, Ph.D., on behalf of the Public Utility Commission of Texas. *Regarding:* Avangrid Inc. acquisition of Texas-New Mexico Power Company.
- January 25, 2021 Nova Scotia Utility and Review Board (NSUARB). Testimony before and on behalf of the NSUARB. *Regarding:* Unit commitment and dispatch of Nova Scotia Power, Inc. (NSPI) as part of biannual audit of the NSPI Fuel Adjustment Mechanism.
- September 15, 2020 Public Service Commission of Utah. Surrebuttal Testimony of Carolyn A. Berry, Ph.D., on behalf of Vote Solar. *Regarding:* The Application of Rocky Mountain Power to Establish Export Credits for Customer Generated Electricity.
- July 15, 2020 Public Service Commission of Utah. Rebuttal Testimony of Carolyn A. Berry, Ph.D., on behalf of Vote Solar. *Regarding:* The Application of Rocky Mountain Power to Establish Export Credits for Customer Generated Electricity.
- May 8, 2020 Public Service Commission of Utah. Revised Affirmative Testimony of Carolyn A. Berry, Ph.D., on behalf of Vote Solar. *Regarding:* The Application of Rocky Mountain Power to Establish Export Credits for Customer Generated Electricity.
- July 31, 2018 U.S. District Court for the District of South Carolina Columbia Division. Testimony at hearing in front of Honorable Judge Childs regarding SCE&G's Motion for Preliminary Injunction. *Regarding:* Recovery of costs incurred for the abandoned V.C. Summer nuclear plant in South Carolina.
- May 13, 2016 Federal Energy Regulatory Commission, Docket No. EL00-95-288. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties concerning California Parties' Protest and Answer to Opinion No. 536-B Compliance Filings. *Regarding:* Calculation of seller refunds and overcharges including cost offsets.
- October 6, 2015 Federal Energy Regulatory Commission, Docket Nos. EL02-60-007 and EL02-62-006 (Consolidated). Prepared Rebuttal Testimony of Carolyn A. Berry, Ph.D. on Behalf of the California Parties, (Exh. No. CAL-706). *Regarding:* The effect of Shell's misreporting on natural gas index prices and the link between Shell's unlawful conduct and the formation of the Shell long-term energy contract with the California Department of Water Resources.
- May 19, 2015 Federal Energy Regulatory Commission, Docket Nos. EL02-60-007 and EL02-62-006 (Consolidated). Prepared Direct Testimony of Carolyn A. Berry, Ph.D. on Behalf of the California Parties, (Exh. No. CAL-268). *Regarding:* Analysis of intentional misreporting of natural gas transactions to index publications by Shell Energy North American and the link between Shell's unlawful conduct and the formation of the Shell long-term energy contract with the California Department of Water Resources.

- March 2, 2015 Federal Energy Regulatory Commission, Docket No. EL00-95-281. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties concerning California Parties' Protest and Answer to Compliance Filings. *Regarding:* Calculation of seller refunds and overcharges for pre-refund period including cost offsets.
- December 10, 2014 Federal Energy Regulatory Commission, Docket No. EL00-95-248. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties concerning California Parties' Motion for Procedures for Compliance Filings and Request for Expedited Action. *Regarding:* Informational requirements and reporting templates for the calculation of refunds and overcharges for sales in the California ISO and PX during the Summer period.
- May 3, 2013 Federal Energy Regulatory Commission, Docket No. EL00-95-248. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties concerning California Parties' Motion for Determination of Overcharges and for Refunds. *Regarding:* Calculation of net buyer positions to determine refunds owed by net sellers to net buyers.
- March 12, 2013 Federal Energy Regulatory Commission, Docket No. EL01-10-085. Prepared Rebuttal Testimony of Dr. Carolyn A. Berry on Behalf of California Parties, (Exh. No. CAT-536). *Regarding:* Market power in PNW electricity markets.
- September 21, 2012 Federal Energy Regulatory Commission, Docket No. EL01-10-085. Prepared Direct Testimony of Dr. Carolyn A. Berry on Behalf of California Parties, (Exh. No. CAT-213). *Regarding:* Market power in PNW markets and the determination of the physical source of energy sales to California.
- March 1, 2012 Federal Energy Regulatory Commission, Docket No. EL00-95-248. Prepared Rebuttal Testimony of Dr. Carolyn A. Berry on Behalf of California Parties, (Exh. No. CAX-260). *Regarding:* Anomalous bidding and anti-competitive behavior in CAISO RT market and the amount of overcharges.
- August 23, 2011 Federal Energy Regulatory Commission, Docket No. EL00-95-248. Prepared Direct Testimony of Dr. Carolyn A. Berry on Behalf of California Parties, (Exh. No. CAX-110). *Regarding:* Anomalous bidding tariff violations in California ISO RT market under the CAISO tariff, computation of competitive baseline prices in the California ISO RT market using dispatch model independently developed for the analysis, and the calculation of overcharges and refunds in the California ISO energy and ancillary services markets for the Summer 2000.
- December 16, 2009 Federal Energy Regulatory Commission, Docket No. EL02-71-000. Rebuttal Testimony of Dr. Carolyn A. Berry on Behalf of California Parties, (Exh. No. CLP-73). *Regarding:* Assessment of quarterly reporting violations under the Commission's rules and remedies for these tariff violations.
- July 1, 2009 Federal Energy Regulatory Commission, Docket No. EL02-71-000. Testimony of Dr. Carolyn A. Berry on Behalf of California Parties, (Exh. No. CLP-1). *Regarding:* Assessment of quarterly reporting violations under the Commission's rules and remedies for these tariff violations.

- June 8, 2009 Federal Energy Regulatory Commission, Docket No. EL01-68-000. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties. *Regarding:* Analytical support for California Parties' Motion for Refunds for Unauthorized Rates in Excess of the Post-June 19, 2001 Proxy Market Clearing Price. Determination of rates in excess of just and reasonable rates as specified in FERC orders.
- May 22, 2009 Federal Energy Regulatory Commission, Docket No. EL09-56-000. Testimony of Dr. Carolyn A. Berry on Behalf of the State of California, *ex rel.* Edmund G. Brown Jr., Attorney General. *Regarding:* Assessment of reporting violations and determination of remedies to the California Energy Resources Scheduling Division of the California Department of Water Resources.
- May 22, 2009 Federal Energy Regulatory Commission, Docket No. EL00-95-000. Testimony of Dr. Carolyn A. Berry on Behalf of California Parties Regarding Remedies. *Regarding:* Methodology to determine refunds in support of the California Parties' motion for summary disposition.
- May 22, 2009 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000. Testimony of Dr. Carolyn A. Berry on Behalf of California Parties Regarding Mis-Reporting in Quarterly Reports. *Regarding:* Assessment of quarterly reporting violations under Commission rules.
- December 22, 2008 Federal Energy Regulatory Commission Docket No. EL00-95-164. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties. *Regarding:* Methodology to compute refunds owed to governmental entities and other non-public utilities.
- April 21, 2008 Federal Energy Regulatory Commission, Docket No. EL02-71-004. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties concerning FERC Quarterly Reporting. *Regarding:* Assessment of quarterly reporting violations under Commission rules.
- November 19, 2007 Federal Energy Regulatory Commission, Docket Nos. EL00-95-164. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties. *Regarding:* Methodology to compute refunds owed to governmental entities and other non-public utilities supporting California Parties' Second Request for Rehearing and Clarification of the Commission's October 19, 2007 Order on Remand.
- October 5, 2007 Federal Energy Regulatory Commission, Docket No. ER07-1373. Declaration of Dr. Carolyn A. Berry on Behalf of Pacific Gas and Electric Company. *Regarding:* Transmission operating agreement on the California-Oregon Intertie.
- July 24, 2007 Federal Energy Regulatory Commission, Docket Nos. EL07-75-000 and EC07-99-000. Declaration of Dr. Carolyn A. Berry on Behalf of the People of the State of California, *ex rel.* Edmund G. Brown Jr., Attorney General, the California Electricity Oversight Board, and the Public Utilities Commission of the State of California. *Regarding:* Impact of proposed merger in Great Plains Energy Incorporated, Kansas City Power & Light Company, and Aquila, Inc. on the ability of secure energy crisis refunds.
- January 19, 2007 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000 *et al.*, EL00-98-000 *et al.*, EL00-98-042, and EL00-98-063. Declaration of Dr. Carolyn A. Berry on Behalf of

- California Parties Concerning the APX Settlement and Release of Claims Agreement.
Regarding: Impact of proposed settlement on market resolution of energy crisis refunds.
- December 4, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000 *et al.*, EL00-95-154, EL00-95-175, EL00-95-180, EL00-98-000 *et al.*, EL00-98-141, EL00-98-161, and EL00-98-166. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties.
Regarding: Errors in November 2006 Cost Filing Submission of Powerex Corp.
- December 4, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000, EL00-95-174, EL00-98-000, and EL00-98-160. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning the Cost Filing Submission of Portland General Electric Company Dated November 16, 2006.
- June 12, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000 and EL00-98-000. Declaration of Dr. Carolyn A. Berry on Behalf of California Parties Concerning Allocation of Cost Recovery Refund Offsets.
- April 13, 2006 Superior Court of the State of California in and for the County of San Diego, J.C.C.P. Nos. 4221,4224, 4226 and 4228. Declaration of Carolyn A. Berry in Support of PG&E's Objections To Class Settlement, in Natural Gas Anti-Trust Cases I, II, III & IV.
Regarding: Refunds owed by Sempra for overcharges in the California electric markets.
- March 29, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000 *et al.*, EL00-95-154, EL00-95-175, EL00-95-180, EL00-98-000 *et al.*, EL00-98-141, EL00-98-161, and EL00-98-166. Prepared Responsive Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Recovery Compliance Filing of Powerex Corp.
- March 29, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000, EL00-95-144, EL00-95-174, EL00-98-000, EL00-98-131, and EL00-98-160. Prepared Responsive Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning the Supplemental Cost Recovery Filing of Portland General Electric Company.
- March 20, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000, EL00-95-142, EL00-98-000, and EL00-98-129. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing Submission of Puget Sound Energy to the California Independent System Operator.
- March 13, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000, EL00-95-154, EL00-95-175, EL00-98-000, EL00-98-141, and EL00-98-161. Prepared Supplemental Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Recovery Compliance Filing of Powerex Corp.
- February 27, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000, EL00-95-144, EL00-98-000, and EL00-98-131. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Recovery Compliance Filing of Portland General Electric Company.

- February 27, 2006 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000, EL00-95-154, EL00-98-000, and EL00-98-141. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Recovery Compliance Filing of Powerex Corp.
- December 1, 2005 Federal Energy Regulatory Commission, Docket Nos. EL00-95-000, EL00-98-000, and ER03-746-000. Declaration of Dr. Carolyn A. Berry on Behalf of the California Parties in support of, "California Parties' Disputes Relating to Cost Offsets and Refund Re-runs."
- October 24, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-142 and EL00-98-129. Prepared Supplemental Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of Puget Sound Energy.
- October 24, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-147 and EL00-98-134. Prepared Supplemental Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of Idaho Power Company and IdaCorp Energy L.P.
- October 25, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-154 and EL00-98-141. Prepared Supplemental Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of Powerex Corp.
- October 11, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-146 and EL00-98-133. Prepared Testimony of Dr. Carolyn A. Berry Concerning Cost Filing of TransAlta Energy Marketing (US) Inc.
- October 11, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-147 and EL00-98-134. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of Idaho Power Company and IdaCorp Energy L.P.
- October 11, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-144 and EL00-98-131. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of Portland General Electric Company.
- October 11, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-154 and EL00-98-141. Prepared Testimony of Dr. Carolyn A. Berry Concerning Cost Filing of Powerex Corp.
- October 11, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-141 and EL00-98-128. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of the PPL Montana LLC and PPL EnergyPlus LLC.
- October 11, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-143 and EL00-98-130. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of the Public Service Company of New Mexico.
- October 11, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-142 and EL00-98-129. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of Puget Sound Energy.
- October 11, 2005 Federal Energy Regulatory Commission, Dockets EL00-95-138 and EL00-98-125. Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning Cost Filing of Edison Mission Marketing & Trading, Inc.

- August 31, 2005 California Public Utilities Commission, Rulemaking Nos. 04-04-003 and 04-04-025. "Pacific Gas and Electric Company Prepared Testimony on Qualifying Facilities Policy and Pricing Issues," Chapter 3, Section D, Proposed SRAC Energy Prices and Chapter 3B, Appendix B, Calculation of Overpayments from Mandated QF S01 Extensions Pursuant to Decisions 03-12-062 and 04-01-050.
- August 22, 2005 Federal Energy Regulatory Commission, Docket Nos. EL00-95 and EL00-98. Declaration of Dr. Carolyn A. Berry on Behalf of the California Parties in support of "California Parties' Comments in Support of Cost Filing Template."
- July 12, 2005 Federal Energy Regulatory Commission, Docket Nos. EL00-95-127, 081, 074, and 086 and EL00-98-114, 069, 062, and 073. Declaration of Dr. Carolyn A. Berry on Behalf of the California Parties Concerning the LADWP Revised Compliance Filing in support of "California Parties' Comments in Opposition to Revised Emissions Calculations and Compliance Filing of the City of Los Angeles Department of Water and Power."
- May 9, 2005 Federal Energy Regulatory Commission, Docket Nos. EL00-95-127, 081, 074, and 086 and EL00-98-114, 069, 062, and 073. Declaration of Dr. Carolyn A. Berry on Behalf of the California Parties in support of "California Parties' Supplemental Comments in Response to Emissions Calculations and Compliance Filing of the City of Los Angeles Department of Water and Power."
- April 7, 2005 Department of Energy, Office of Coal and Power, Import/Export Office of Fossil Energy, Docket No. EA-171-B. Reply Declaration of Dr. Carolyn A. Berry on Behalf of the California Entities in support of "California Entities' Petition to Intervene and Protest Application of Powerex Corporation for Renewal of Export License." *Regarding:* Violations of Powerex's export license.
- March 7, 2005 Department of Energy, Office of Coal and Power, Import/Export Office of Fossil Energy, Docket No. EA-171-B. Declaration of Dr. Carolyn A. Berry on Behalf of the California Entities in support of "California Entities' Petition to Intervene and Protest Application of Powerex Corporation for Renewal of Export License."
- January 19, 2005 Federal Energy Regulatory Commission, Docket Nos. EL00-95 and EL00-98. Reply Declaration of Dr. Carolyn A. Berry on Behalf of the California Parties in support of "California Parties' Reply Comments on the Substance, Format and Support for Cost-Based Filings."
- January 10, 2005 Federal Energy Regulatory Commission, Docket Nos. EL00-95 and EL00-98. Declaration of Dr. Carolyn A. Berry on Behalf of the California Parties in support of "California Parties' Comments on the Substance, Format and Support for Cost-Based Filings."
- June 14, 2004 Federal Energy Regulatory Commission, Docket No. EL00-95-087. Declaration of Dr. Carolyn A. Berry in support of "California Parties' Request for Rehearing of May 12 Order on Requests for Rehearing and Clarification." *Regarding:* Price mitigation of the \$2.9 billion imbalance energy sales by the California Energy Resource Scheduling Division of the California Department of Water Resources.

- April 26, 2004 Federal Energy Regulatory Commission, Docket Nos. EL03-166-000. Declaration of Dr. Carolyn A. Berry in support of "California Parties' Request for Rehearing of Order Approving Contested Settlement Agreement Between FERC Trial Staff and Powerex Corporation. *Regarding:* Powerex gaming in the California electric markets and unauthorized partnerships.
- February 17, 2004 California Public Utilities Commission, R.99-11-022. Declaration of Dr. Carolyn A. Berry in support of "Opening Comments of Pacific Gas and Electric Company, The Office of Ratepayer Advocates, and the Utility Reform Network Regarding Qualifying Facility SRAC Payments From December 2000 Through March 2001." *Regarding:* Level of short-run avoided cost (SRAC) payments.
- January 20, 2004 Federal Energy Regulatory Commission, Docket Nos. IN03-10-000, PA02-2-000, *et al.* Declaration of Dr. Carolyn A. Berry in support of "California Parties' Request For Rehearing of Order Approving Stipulation and Consent Agreement With Duke."
- November 20, 2003 Federal Energy Regulatory Commission, Docket Nos. EL03-166-000, EL03-199-000, *et al.* Declaration of Dr. Carolyn A. Berry in support of "California Parties' Comments in Opposition to Proposed Agreement and Stipulation by Powerex Corp. and FERC Trial Staff." *Regarding:* Powerex gaming in the California electric markets and unauthorized partnerships.
- September 30, 2003 Federal Energy Regulatory Commission, Docket No. EL03-179-000. Declaration of Dr. Carolyn A. Berry in support of "Comments of Pacific Gas and Electric Company and Southern California Edison Company in Opposition to the Williams Settlement." *Regarding:* Williams gaming in the California electric markets and unauthorized partnerships.
- May 21, 2003 Federal Energy Regulatory Commission, Docket Nos. EL00-95-045 and EL00-98-042. Declaration of Dr. Carolyn A. Berry on Behalf of the California Parties in support of "California Parties' Motion to Reject Gas Cost Allowance Filings, Clarify Scope of Permissible Costs, and Establish Procedures." *Regarding:* Fuel cost allowance methodology and claims.
- May 2, 2003 Federal Energy Regulatory Commission, Docket Nos. PA02-2-000, EL00-95-075, and EL00-98-063. Declaration of Carolyn A. Berry on Behalf of Pacific Gas and Electric Company in *Fact Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices*. *Regarding:* Method to compute natural gas cost allowance.
- March 3, 2003 Federal Energy Regulatory Commission, Docket No. EL00-95-000 (100 Days Discovery). Prepared Testimony of Dr. Carolyn A. Berry on Behalf of the California Parties. *Regarding:* Anomalous bidding in the California ISO spot electricity markets.
- October 15, 2002 Federal Energy Regulatory Commission, Docket Nos. EL00-95-045 and EL00-98-042. Declaration of Dr. Carolyn A. Berry on Behalf of Pacific Gas & Electric Company and the California Parties in response to the Commission's request for comments regarding the method for determining natural gas prices for purposes of calculating refunds as described in the staff report, "Initial Report on Company-Specific Separate Proceedings

and Generic Reevaluations; Published Natural Gas Price Data; and Enron Trading Strategies” in Docket PA02-2-000.

- August 9, 2002 Federal Energy Regulatory Commission, Docket Nos. EL00-95-045. Prepared Surrebuttal Testimony of Dr. Carolyn A. Berry on Issues 2 and 3 Submitted on Behalf of the California Parties. *Regarding:* Application of the MMCP methodology during the Refund Period.
- July 26, 2002 Federal Energy Regulatory Commission, Docket Nos. EL00-95-045. Prepared Rebuttal Testimony on Issues 2 and 3 of Dr. Carolyn A. Berry on Behalf of the California Parties. *Regarding:* Application of the MMCP methodology during the Refund Period.
- July 3, 2002 Federal Energy Regulatory Commission, Docket Nos. EL00-95-045. Prepared Responsive Testimony on Issues 2 and 3 of Dr. Carolyn A. Berry on Behalf of the California Parties. *Regarding:* Application of the MMCP methodology during the Refund Period.
- February 25, 2002 Federal Energy Regulatory Commission, Docket Nos. EL00-95-045. Prepared Rebuttal Testimony on Behalf of the California Parties. *Regarding:* Computation and application of the MMCP methodology during the Refund Period.
- February 4, 2002 Federal Energy Regulatory Commission, Docket Nos. EL00-95-001, EL00-98-001, *et al.* Declaration of Dr. Carolyn A. Berry in Support of Response of the California Parties. *Regarding:* Effects of the application of the MMCP as a clearing price, instead of cap.
- January 31, 2002 Federal Energy Regulatory Commission, Docket Nos. EL00-95-045. Prepared Supplemental Responsive Testimony on Behalf of the California Parties. *Regarding:* Modified analysis of bid prices for mitigated market clearing prices.
- November 6, 2001 Federal Energy Regulatory Commission, Docket Nos. EL00-95-045. Prepared Responsive Testimony on Behalf of the California Parties. *Regarding:* Analysis of heat rates and bid prices for the calculation of mitigated market clearing prices.
- July 8, 2001 Federal Energy Regulatory Commission, Docket EL00-95-031. Testimony on behalf of Pacific Gas and Electric Company. *Regarding:* Refund methodology for overcharges in California markets.
- November 22, 2000 Federal Energy Regulatory Commission, Docket EL00-95-000. Testimony on behalf of Pacific Gas and Electric Company in support of “Comments, Motion for Expedited Relief, and Application for Rehearing of PG&E.” *Regarding:* Estimation of margins earned by sellers for sales to the ISO and PX electricity and ancillary services markets during the summer period 2000.
- February 8, 2000 Federal Energy Regulatory Commission, Dockets ER98-495-000, ER98-496-006, ER98-496-000, *et al.* Prepared Direct Testimony on behalf of the Federal Energy Regulatory Commission. *Regarding:* Payments to reliability must run units in the California Independent System Operator market.

PUBLICATIONS

- “Communities Advancing the U.S. Energy Transition,” with Vincent Musco, IAEE Energy Forum, 1st Quarter 2024.
- “How to Fix Discrimination Issues in SE Power Market Plan,” with Galen Erickson, *Law360*, December 3, 2021.
- “Amend Texas Emergency Electric Rules to Protect Customers.” *Law360*, May 17, 2021.
- “Market Power Analysis of the Electricity Generation Sector,” with William H. Hieronymous and J. Stephen Henderson. *Energy Law Journal* 23, no. 1 (2002).
- “Understanding How Market Power Can Arise in Network Competition: A Game Theoretical Approach,” with Benjamin F. Hobbs, William A. Meroney, Richard P. O’Neill, and William R. Steward, Jr. *Utilities Policy* 8, no 3 (1999).
- “Why Are Nodal Prices Sometimes Higher than \$1,000 If Supply Bids Are Capped at \$1,000?” *Economic Note*, FERC, August 1999.

PRESENTATIONS AND PANELS

- Speaker at GAR LIVE Construction Disputes, Multi-party/multi-contract arbitrations – expert evidence, Hotel Du Collectionneur, Paris, March 21, 2024.
- Presentation before the Regulatory Assistance Project’s (RAP’s) 24/7 Carbon-Free Workshop regarding Ratemaking, Pricing, and Compensation, August 1, 2023.
- “Energy Market Economics: Global Events and Their Impact on Electric Markets in the West,” Panelist, 28th Electric Power in the West conference, January 26, 2023.
- “Grid Reliability Challenges: Will the Lights Stay On?” Panelist, Day Pitney webinar, November 10, 2022.
- “Energy Market Economics in the West—Return to Higher Natural Gas Prices: Is It a New Normal?” Presentation at the 27th Annual Seattle Conference on Electric Power in the West, April 15, 2022.
- “The Electricity Markets of Today—Will They Look the Same Tomorrow under New FERC Leadership?” Panel moderator at 16th annual Northeast Power and Gas Markets conference, May 2021.
- “FERC’s Anti-Market Manipulation: Enforcement and Compliance Issues to Watch Out For,” addressing FERC enforcement process; market manipulation and fraud; and Vitol Inc. and Dynegy manipulation cases. LIVE Webcast, The Knowledge Group, October 2019.
- “Base Refund Calculation for Energy and Ancillary Services.” Presentation at industry-wide energy crisis settlement conference, Washington, DC, September 2006.
- “California Energy Crisis.” Kogod Interactive Third Annual MBA Conference on Business Trends, American University Kogod School of Business, Washington, DC, February 2002.
- “California Electric Industry Restructuring: What Went Wrong? Where Do We Go from Here?” Forum for Women State Legislators, Power Politics: Energy Policy in the United States, Dan Point, CA, November 2001.
- “Distribution Services under Retail Access.” World Bank presentation, Washington, DC, June 2001.

- "California Power Crisis: Implications for Power Sector Reform in Emerging Economies?" With William Meroney, Seminar in Energy Markets and Reform Thematic Group, World Bank, Washington, DC, January 2001.
- "Analyzing Strategic Behavior in Transmission Networks." by Carolyn A. Berry, Benjamin F. Hobbs, William A. Meroney, Richard P. O'Neill, and William R. Stewart, Jr., presentation at the IEEE/PES Power Engineering Society 1999 Summer Meeting, Edmonton, Alberta, Canada, July 22, 1999.

PROFESSIONAL ASSOCIATIONS

- International Association for Energy Economics
- American Economic Association
- Women's Council on Energy and the Environment

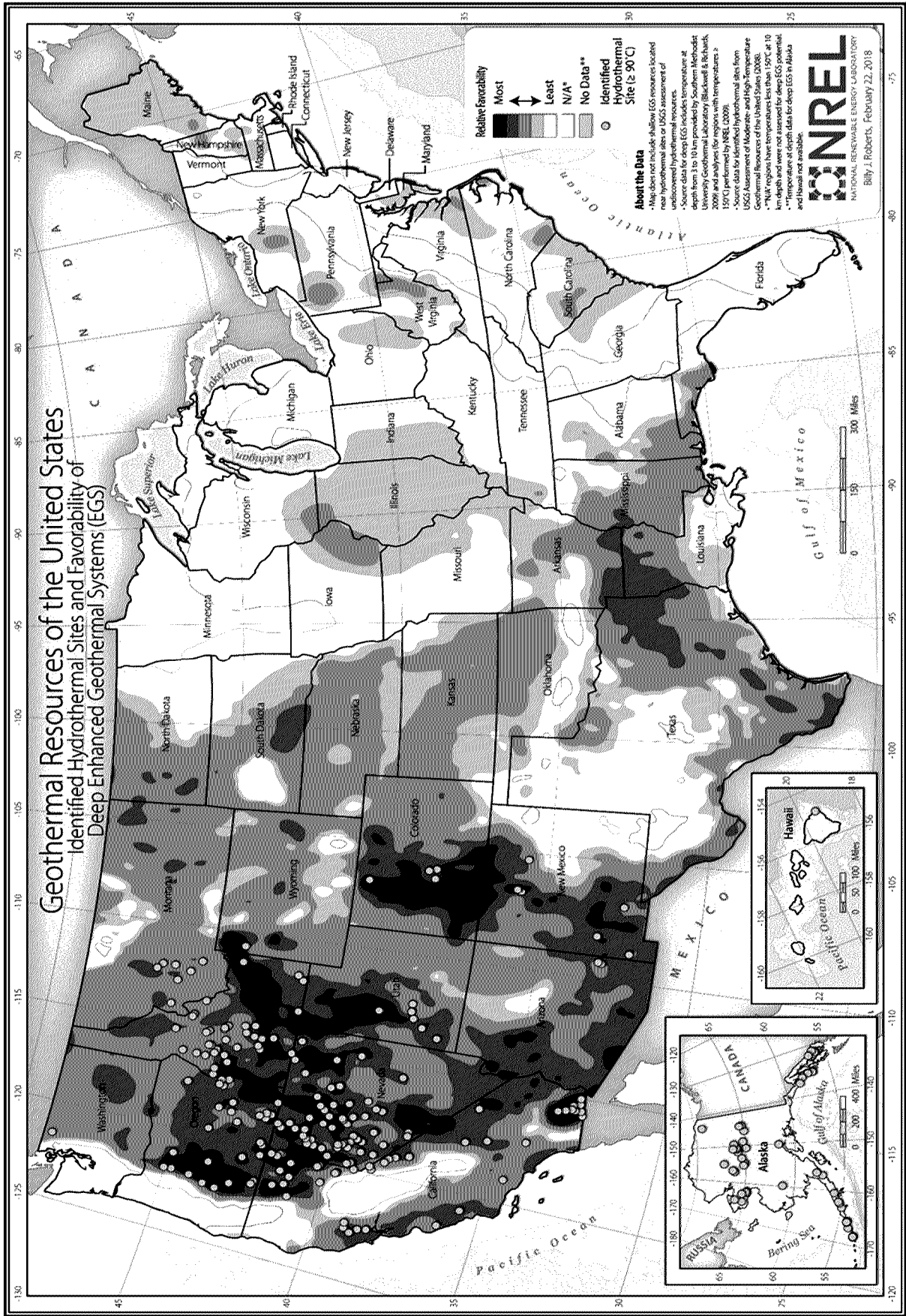
LANGUAGES

- Spanish (fluent)

EXHIBIT

BERRY-DIRECT-2

Geothermal Resources of the United States Identified Hydrothermal Sites and Favorability of Deep Enhanced Geothermal Systems (EGS)

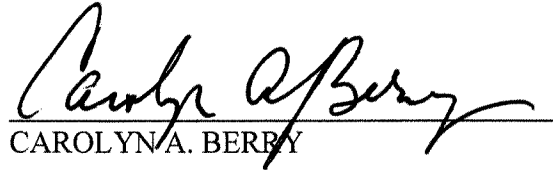


Billy J. Roberts, February 22, 2018

AFFIRMATION

I, Carolyn A. Berry, pursuant to NAC 703.710 hereby affirm that the foregoing prepared direct testimony was prepared by me or under my direction and is correct to the best of my knowledge.

Dated: June 5, 2024


CAROLYN A. BERRY

CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing filing for **SIERRA PACIFIC POWER COMPANY d/b/a NV ENERGY** in Docket No. 24-06____ upon the persons listed below by electronic service:

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DATED this 7th day of June, 2024.

/s/ Erin Moore
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Paralegal
Sierra Pacific Power Company d/b/a NV Energy