EXHIBIT
136

November 4, 2024

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

RE: **Docket No. 24-05041** – Joint Application of Nevada Power Company d/b/a NV Energy and Sierra Pacific Power Company d/b/a NV Energy for approval of their 2025-2044 Triennial Integrated Resource Plan and 2025-2027 Energy Supply Plan.

Dear Ms. Osborne:

Pursuant to Procedural Order No. 8 issued October 23, 2024, please accept for filing Nevada Power Company d/b/a NV Energy and Sierra Pacific Power Company d/b/a NV Energy (the "Companies") pre-marked Exhibit 136, NPC-SPPC IRP, Prepared Direct Testimony of Robert Oliver, filed on May 31, 2024, in the above-referenced docket.

Should you have any questions regarding this filing, please contact me at (775) 834-3470 or roman.borisov@nvenergy.com.

Respectfully submitted,

/s/ Roman Borisov
Roman Borisov
Senior Attorney

ROBERT OLIVER

BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

Nevada Power Company d/b/a NV Energy
Sierra Pacific Power Company d/b/a NV Energy

2024 Joint Integrated Resource Plan (2025-2044)
Docket No. 24-05____

Prepared Direct Testimony of

Robert R. Oliver

I. INTRODUCTION

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

A. My name is Robert R. Oliver. I am filing testimony on behalf of Nevada Power Company d/b/a NV Energy ("Nevada Power") and Sierra Pacific Power Company d/b/a NV Energy ("Sierra" and together with Nevada Power, "NV Energy"). I am currently a Principal at ADM Associates, Inc. ("ADM"), an independent third-party evaluation, measurement, and verification ("EM&V") contractor that provides consulting services and performs measurement and verification ("M&V") activities and reporting for NV Energy. ADM is providing M&V reports for NV Energy's Demand Side Management ("DSM") Portfolio of programs as part of this filing. My business address is 417 W. Plumb Lane, Reno, Nevada.

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

A. I have a Bachelor of Science in economics and business management from Cornell University. I have been employed by ADM since 2010. I have participated in the independent third-party M&V activities for NV Energy's energy efficiency programs since 2007 and have provided consulting services in various energy efficiency-related assignments since 2005. I was previously a consultant for the

Nevada Task Force for Renewable Energy and Energy Conservation in 2004 and 2005. More details regarding my professional background and experience are set forth in my Statement of Qualifications, included as **Exhibit Oliver-Direct-1**.

3. Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS THE PRINCIPAL-IN-CHARGE OF EM&V ACTIVITIES FOR NV ENERGY'S DSM PROGRAMS.

A. As the Principal-in-Charge of EM&V activities, my responsibilities include analyses, quality assurance and project management tasks on behalf of NV Energy's DSM programs, which include: Business Energy Services; Commercial Demand Response ("DR"), Manage and Build; Direct Install and Home Improvements ("Direct Install"); Energy Assessments, In-Home and Online; Energy Education; Energy Smart Schools; Home Energy Reports; Home Energy Saver; Low Income; Residential Codes and New Construction; and Residential DR, Manage and Build.

I also provide guidance and quality assurance for ADM's development of energy savings curves for NV Energy's DSM programs. Further, I direct and coordinate all EM&V activities and analyses for ADM's cross-discipline team of data scientists, economists, econometricians, engineers, sociologists, statisticians, and other professionals who participate in the independent evaluation of NV Energy's portfolio of DSM programs.

4. Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA ("COMMISSION") OR SUPPORTED ADM'S TESTIMONY PROVIDED TO THE COMMISSION?

A. Yes. I previously testified before the Commission in the following dockets:

- Sierra 2011 Annual DSM Update Report: Docket No. 11-07026;
- Nevada Power 2011 Annual DSM Update Report: Docket No. 11-07027;
- Nevada Power 2012 Deferred Energy Accounting Adjustments ("DEAA"): Docket No. 12-03004;
- Sierra 2012 DEAA: Docket No. 12-03005;
- Sierra 2012 Annual DSM Update Report: Docket No. 12-06052;
- Nevada Power 2012 Integrated Resource Plan ("IRP"): Docket No. 12-06053;
- Nevada Power 2017 Annual DSM Update Report: Docket No. 17-06043;
- Sierra 2017 Annual DSM Update Report: Docket No. 17-06044;
- NV Energy 2018 Joint IRP: Docket No. 18-06003;
- NV Energy 2019 Joint DSM Update Report: Docket No. 19-07004;
- NV Energy 2020 Joint DSM Update Report: Docket No. 20-07004;
- NV Energy 2021 Joint IRP: Docket No. 21-06001;
- NV Energy 2022 Joint DSM Update Report: Docket No. 22-07004; and
- NV Energy 2023 Joint DSM Update Report: Docket No. 23-06044.

I have also collaborated with and supported my ADM colleague, Sasha S. Baroiant, with respect to his testimony before the Commission in the following dockets:

- Nevada Power 2013 DEAA: Docket No. 13-03003;
- Sierra 2013 DEAA: Docket No. 13-03004;
- Nevada Power 2013 Annual DSM Update Report: Docket No. 13-07002;
- Sierra 2013 IRP: Docket No. 13-07005;
- Sierra 2014 Annual DSM Update Report: Docket No. 14-07007;
- Nevada Power 2014 Annual DSM Update Report: Docket No. 14-07008;
- Sierra 2015 Annual DSM Update Report: Docket No. 15-06065;
- Nevada Power 2015 IRP: Docket No. 15-07004;
- Sierra 2016 IRP: Docket No. 16-07001; and

- Nevada Power 2016 Annual DSM Update Report: Docket No. 16-07007.

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

A. Together with NV Energy's witness, Christopher Belcher, I sponsor the M&V reports contained in Technical Appendices DSM-13 through DSM-23. The M&V reports provide descriptions and documentation related to all analyses that ADM performed to verify energy (kilowatt-hour or "kWh") savings and critical peak demand (kilowatt or "kW") savings achieved by NV Energy's 2023 portfolio of DSM programs.

I provide a section by section overview of the contents of my testimony in Q&A 7.

6. Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes, I am sponsoring the following exhibit:

Exhibit Oliver-Direct-1: Statement of Qualifications

7. Q. PLEASE PROVIDE AN OVERVIEW OF YOUR TESTIMONY.

A. In Section II of my testimony, I describe the work that ADM performs in preparing M&V reports for NV Energy's DSM programs, and I describe the industry standards that guide M&V activities and reporting. In Section III, I address 2023 updates to M&V analyses for residential lighting measures. In Section IV, I summarize 2023 updates to energy savings curves. In Section V, I discuss M&V use of AMI data. In Section VI, I describe M&V findings for the new DR battery storage measure in NV Energy's residential DR program. In Section VII, I summarize ADM's low-income analyses conducted on residential DSM programs. In Section VIII, I address how ADM avoids double counting of savings for cross-participants. In Section IX, I address M&V findings for the Online Energy

Assessments Program, and in Section X, I address M&V findings for the Home Energy Reports Program. In Section XI, I address M&V data collection topics.

II. M&V REPORTS FOR DSM PROGRAMS

8. Q. PLEASE DESCRIBE THE WORK ADM PERFORMS IN PREPARING M&V REPORTS FOR NV ENERGY'S DSM PROGRAMS.

A. ADM collects and analyzes data to independently determine energy savings and demand reductions for NV Energy's DSM programs. Data collection begins with inspection of data entered by NV Energy or NV Energy's program implementers into DSM Central ("DSMC"). DSMC is the data management system used by NV Energy to track participants, measures, energy savings, and demand reductions attributed to each DSM program. The data in DSMC is project-specific, listing customer-descriptive data, energy savings, and demand savings that are recorded at the measure level, whenever practical. After reviewing the DSMC records, ADM collects primary M&V data through various due-diligence activities including the following:

- Inspect and analyze all project documentation for a representative sample of implemented projects;
- Conduct on-site or virtual audits or inspections of a representative sample of implemented projects; and
- Conduct interviews and surveys for a representative sample of program participants.

Through these M&V activities, ADM verifies that the energy efficiency and DR measures recorded in DSMC have been appropriately installed and are being utilized by the customers who participated in NV Energy's programs. ADM also collects the data needed to analyze and calculate energy (i.e., kWh) savings and

critical peak demand (i.e., kW) savings. All data collection activities are guided by appropriate statistical sampling procedures.

Using the data collected, ADM calculates and validates annual and monthly kWh savings and critical peak kW savings for each DSM program. M&V analyses are performed using engineering calculations and statistical analyses, as appropriate. The ADM team provides NV Energy with annual reports for programs based on the results of ADM's independent M&V work. NV Energy uses the results of the annual M&V reports to appraise program performance and develop strategies for program improvements. M&V reports are also submitted to the Commission for review.

9. Q. PLEASE DESCRIBE IN MORE DETAIL THE GENERAL INDUSTRY STANDARDS AND SPECIFICATIONS THAT GOVERN THE M&V OF ENERGY AND DEMAND SAVINGS.

A. The success of utility-sponsored DSM activities is closely scrutinized in many regulatory jurisdictions to ensure customer funds are prudently spent and DSM programs are delivering energy savings and demand reductions that are expected by system planners. Independent third-party M&V is an industry standard that is typically a mandatory activity for utilities performing DSM. Standards and specifications that guide M&V activities are set forth in several guidebook documents, including the following:

- EM&V protocols for DSM measures, published through the Uniform Methods Project ("UMP") sponsored by the U.S. Department of Energy ("DOE");[1]

[1] Available at www.energy.gov/eere/about-us/ump-protocols.

- International Performance Measurement and Verification Protocol ("IPMVP"). *Core Concepts*. Efficiency Valuation Organization. October 2016;[2]
- *M&V Guidelines: Measurement and Verification for Performance-Based Contracts Version 4.0*, DOE Federal Energy Management Program ("FEMP"), November 2015; and *Supplement to M&V Guidelines: Measurement and Verification for Performance-Based Contracts Version 4.0*, FEMP, September 2023;[3]
- American Society of Heating, Refrigeration and Air Conditioning Engineers ("ASHRAE"). *Guideline 14-2014: Measurement of Energy, Demand and Water Savings*;[4]
- *National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources*, National Efficiency Screening Project, May 2017;[5]
- *Energy Efficiency Program Impact Evaluation Guide*, State and Local Energy Efficiency Action Network, December 2012;[6] and
- *SEE Action Guide for States: Evaluation, Measurement, and Verification Frameworks—Guidance for Energy Efficiency Portfolios Funded by Utility Customers*, State and Local Energy Efficiency Action Network, January 2018.[7]

10. Q. DID ADM FOLLOW INDUSTRY STANDARDS IN PERFORMING THE M&V SCOPE OF WORK REQUESTED BY NV ENERGY?

[2] IPMVP *Core Concepts* may be downloaded at www.evo-world.org by establishing a free account. (Also, a very similar IPMVP version is here: www.eeperformance.org/uploads/8/6/5/0/8650231/ipmvp_volume_i__2012.pdf.)
[3] Available at www.energy.gov/sites/prod/files/2016/01/f28/mv_guide_4_0.pdf and https://www.energy.gov/sites/default/files/2023-09/supplement-to-mv-guidelines_version-4.pdf.
[4] Available at https://www.techstreet.com/ashrae/standards/guideline-14-2014-measurement-of-energy-demand-and-water-savings?gateway_code=ashrae&product_id=1888937.
[5] Available at www.nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf.
[6] Available at www4.eere.energy.gov/seeaction/system/files/documents/emv_ee_program_impact_guide_0.pdf.
[7] Available at www7.eere.energy.gov/seeaction/system/files/documents/EMV-Framework_Jan2018.pdf; this EM&V guidance document succeeds and contains references to the California Public Utilities Commission's June 2004 *California Evaluation Framework.*

A. Yes. All M&V work ADM performed in evaluating NV Energy's 2023 DSM programs complies with industry standards. However, the accepted evaluation methodologies described offer various approaches to evaluate a given measure or program and, therefore, it is not possible to concurrently comply with all recommended approaches. ADM selects from available protocols to achieve the most rigorous overall evaluation of a measure under the circumstances.

11. Q. PLEASE SUMMARIZE THE APPROACHES THAT ADM USED TO MEASURE AND VERIFY SAVINGS FOR 2023 PROGRAMS.

A. The taxonomy provided in the *Energy Efficiency Program Impact Evaluation Guide* identifies three major approaches for determining energy savings and demand reduction:

- A **site-specific or project-by-project M&V approach** involves (1) selecting a representative sample of program participants, (2) employing one or more of the M&V options defined in the IPMVP to determine savings for sampled sites or projects, and (3) using standard statistical methods, apply the results for sampled projects to the determination of program-level savings.
- A **deemed savings approach** involves using stipulated savings for well-known energy conservation measures with well-documented savings. For example, this approach may be used for lighting retrofits for common types of spaces (e.g., offices), where there is general agreement on the hours of use for such spaces.
- A **large-scale consumption data analysis approach** involves determining energy savings and demand reduction by applying standard statistical methods to the measured energy consumption, utility meter billing data and independent variable data. This approach (1) usually involves analysis of a census of project

sites versus a sample, (2) may include the use of a control group[8] and (3) typically does not require on-site data collection for model calibration. However, a sample of customers or sites may be selected and visited to verify proper installation and operation of the energy conservation measures.

When performing M&V analyses, ADM examined program documentation to identify (1) the types of energy efficiency measures from which savings are expected to be achieved and (2) which of the three aforementioned analytical approaches is most appropriate for determining savings for a particular measure or program. In choosing the savings estimation approach, ADM takes account of several factors:

- The magnitude of expected savings from a program or measure. In particular, analysis of billing data may not be sufficient to detect savings of small magnitude for some measures.
- The number and complexity of measures and technologies that are promoted through a program. For example, if multiple measures are installed at a single customer site, the measures may cause overlapping or interactive impacts. Identifying impacts of individual measures, therefore, requires using a savings estimation approach that accounts for the impact of interrelated measures.
- Costs associated with the various analytical approaches.

[8] Scientific studies commonly utilize two distinct groups of subjects: a treatment group and a control group (which may also be called a comparison group). Treatment and control groups must exhibit similar pre-study characteristics. As the study commences, all treatment group subjects receive a specific and tangible treatment, e.g., a medical intervention, a behavioral intervention, or an energy efficiency measure. Control group subjects receive nothing of value (but might receive a placebo in a human medical trial); oftentimes, the control group is undisturbed. For a given energy efficiency study that ADM conducts for NV Energy, the treatment group consists of customers who received a specific energy efficiency measure or behavioral intervention. The corresponding control group consists of customers with similar pre-study characteristics who did not receive a measure or intervention. ADM subsequently determines the energy impacts of the treatment by comparing the outcomes of the customers in the treatment group to the undisturbed outcomes of the customers in the control group.

III. UPDATES TO 2023 M&V ANALYSES FOR RESIDENTIAL LIGHTING

12. Q. HOW DID REGULATIONS RESULTING FROM NEVADA ASSEMBLY BILL 54 (2019) ("AB 54") AFFECT M&V METHODS?

A. All light-emitting diode ("LED") bulbs distributed by NV Energy's 2023 Low Income, Direct Install, and Energy Education programs are general service lamps ("GSLs") per AB 54 regulations.[9]

For the LED bulbs distributed by those programs, ADM utilized a dual-baseline methodology that ensures accurate reporting for LED lifetime energy savings, effective useful life ("EUL"), and cost effectiveness. The M&V methodology for the dual baseline is described in the corresponding M&V reports.

Nevada's AB 54 regulations are similar to federal Energy Independence and Security Act of 2007 ("EISA")[10] codes, which provide two tiers of code changes for GSLs:

- EISA 'Tier 1' codes, which started impacting consumers in 2013, limited GSLs to 29W for a 40W equivalent bulb, 43W for a 60W equivalent bulb, 53W for a 75W equivalent bulb, and 72W for a 100W equivalent bulb.[11]

[9] LCB File No. R100-19, promulgated pursuant to NRS 701.260; for additional information, see https://www.leg.state.nv.us/Register/2019Register/R100-19AP.pdf.
[10] Available at https://www.govinfo.gov/content/pkg/PLAW-110publ140/pdf/PLAW-110publ140.pdf.
[11] Bulb equivalencies (e.g., 40W, 60W, 75W, and 100W) refer to the wattage of traditional Edison incandescent light bulbs.

- EISA 'Tier 2' codes[12] set a minimum GSL efficacy of 45 lumens per watt, limiting GSLs to 12W for a 40W equivalent bulb, 20W for a 60W equivalent bulb, 28W for a 75W equivalent bulb, and 45W for a 100W equivalent bulb.

The AB 54 regulations, which became effective on January 1, 2021, required compliance equivalent to EISA Tier 2. All LEDs distributed through NV Energy's 2023 DSM programs were GSLs, i.e., subject to AB 54 regulations.

13. Q. PLEASE EXPLAIN ADM'S DUAL-BASELINE METHODOLOGY FOR CALCULATING LIFETIME SAVINGS FOR LEDS.

A. In recent years, many EM&V stakeholders have asserted that a dual baseline for LEDs may use EISA Tier 1 savings for approximately three years after Tier 2 begins.[13] The rationale is that EISA Tier 1-compliant halogen GSLs typically have rated lives of three years or more, and 'out-of-code' bulbs such as halogen GSLs may remain available to consumers for a time interval after the new code begins.

NV Energy's 2023 Low Income, Direct Install, and Energy Education programs provided customers ENERGY STAR® certified[14] LEDs that replaced the inefficient GSLs that were in sockets at the time that the GSLs were replaced. Given

[12] According to the EISA statute, its Tier 2 codes were to become effective by January 1, 2020. However, in 2019 the DOE set aside Tier 2 requirements, enabling the lighting industry to disregard Tier 2 codes. Subsequently, on May 9, 2022, the DOE published a final rule implementing EISA Tier 2 codes effective July 25, 2022, in all states that had not previously implemented regulations similar to those required by AB 54 (Federal Register Vol. 87, No. 89, May 9, 2022, at 27439; see www.govinfo.gov/content/pkg/FR-2022-05-09/pdf/2022-09477.pdf). The DOE also published multiple documents indicating that full enforcement would begin August 1, 2023 – see www.energy.gov/sites/default/files/2022-04/GSL_EnforcementPolicy_4_25_22.pdf and www.energy.gov/sites/default/files/2022-05/GSL%20Backstop%20Enforcement%20Webinar%20May%204%202022.pdf.

[13] For example, the Arkansas Technical Reference Manual ("TRM") Version 8.0, authored by the numerous stakeholders in the Arkansas group known as the Parties Working Collaboratively ("PWC"), asserted that, if EISA Tier 2 had taken effect January 1, 2020, then Tier 1 savings would end three years later on December 31, 2022. See Arkansas TRM 8 Vol 2, Page 224, Footnote 347.

[14] The ENERGY STAR lighting database can be downloaded from the following website: https://www.energystar.gov/productfinder/product/certified-light-bulbs/results.

that it is not practical to measure with certainty the remaining useful life ("RUL") of the replaced GSLs, ADM assumed an average RUL of two years. Therefore, for the LEDs that were provided to participants in those programs, ADM used two years for the first part of the dual baseline.

For the second part of the dual baseline, ADM used the EISA Tier 2 baseline (as provided in Q&A #12 above) for the third year through the end of the nominal EUL for each LED model. Nominal EUL, which is the quotient of the LED's rated life and 1,029 hours per year,[15] cannot exceed 20 years, consistent with previously approved M&V methodology.

For example, an 11W A19 GSL[16] LED rated at 1,300 lumens provides similar illumination as a 75W traditional Edison incandescent bulb or a 53W halogen GSL. If the 11W LED has a nominal EUL of 14.6 years (15,000-hour rated life divided by 1,029 hr/yr) and was installed before the end of 2023, annual energy savings and lifetime energy savings are calculated as follows.

- EISA Tier 1 annual savings (Q&A #12 above provides the Watts per LED):
  (53-11) W • 1,029.3 hr/yr. ÷ 1000 W/kW = 43.2 kWh
- EISA Tier 1 baseline applies for two years:
  EISA Tier 1 annual savings of 43.2 kWh times 2.0 years equals 86.4 kWh.
- EISA Tier 2 baseline applies for the rest of the nominal EUL, i.e., 12.6 years:
  (28-11) W • 1,029.3 hr/yr ÷ 1000 W/kW = 17.5 kWh/yr. • 12.6 yr. = 220.5 kWh
- The lifetime kWh savings per LED is 306.9 kWh:
  86.4 kWh (Tier 1) + 220.5 kWh (Tier 2) = 306.9 kWh (lifetime savings)

[15] During September 2014 to April 2015, ADM completed a statewide LED Monitoring Study for NV Energy through which residential LED hours of use ("HOU") was found to be 2.82 hours per day or 1,029 hours/year.
[16] A19 is the most familiar form factor for GSL bulbs; the A19 form is a common, pear-shaped bulb.

A lifetime savings stream derived from a dual baseline does not provide the normal inputs for NV Energy's planning models and forecasting tools (e.g., ACE guru). Thus, to ensure accurate modeling and forecasting, ADM translates the dual baseline into a single, shortened EUL that facilitates accurate ACE guru analyses. Whether for a given energy efficiency measure or a whole DSM program, EUL can be described as the quotient of lifetime energy savings and annual energy savings. Similarly, for a given LED, its shortened EUL is the quotient of lifetime savings and Tier 1 annual savings. For example, the 11W LED described above has a 14.6-year nominal EUL but a shortened EUL of 7.1 years:

- 306.9 kWh lifetime savings ÷ 43.2 kWh/yr. = 7.1 years (shortened EUL).

14. Q. PLEASE EXPLAIN THE M&V METHODOLOGY FOR CALCULATING SAVINGS FOR LEDS INSTALLED THROUGH THE 2023 RESIDENTIAL CODES AND NEW CONSTRUCTION PROGRAM.

A. The 2023 program year was the first full program year for the Residential Codes and New Construction Program (NV Energy began implementing this program in mid-2022). To date, the Residential Codes and New Construction Program has only been implemented successfully in the Nevada Power service area.

For LEDs installed through the 2023 Residential Codes and New Construction Program, ADM employed engineering analyses to determine ex-post verified energy savings per LED. Ex-post savings were calculated using methods consistent with Chapter 6 of the UMP.[17] ADM's calculations used a compact fluorescent lamp

[17] The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures: January 2012 - September 2016 (nrel.gov), https://www.nrel.gov/docs/fy18osti/70472.pdf.

("CFL") baseline, consistent with the 2018 International Energy Conservation Code ("IECC 2018") as amended for southern Nevada.[18]

To determine the per dwelling ex-post verified energy savings for LEDs, ADM assumed an average count of 58 bulbs per dwelling, which is consistent with NV Energy's assertion of an average of "58 sockets per home" in a 2011 DSM Update Report.[19] In ADM's judgement, 58 bulbs per dwelling is a reasonable estimate to be applied to the 2023 Residential Codes and New Construction Program.

IV. UPDATES TO ENERGY SAVINGS CURVES

15. Q. DID ADM UPDATE ITS METHODOLOGY FOR 2023 ENERGY SAVINGS CURVES?

A. There were no substantive changes in M&V methodology in 2023, but energy savings curves were modified incrementally from the previous program year.

ADM's goal is to provide the best possible representation of the program-level and portfolio-level impacts each time a program is evaluated. As DSM programs evolve (e.g., through inclusion of new measures, changes in measure distributions or even changes in code or market baselines), it may be appropriate to update the M&V analysis by developing or selecting optimal energy savings curves that may differ incrementally from previous energy savings curves. ADM is committed to

[18] All dwellings in the 2023 program were permitted under IECC 2018. "Southern Nevada Amendments to the 2018 International Energy Conservation Code," which were adopted by the Clark County Commission on 8/21/2018 with the effective date of 2/4/2019, can be found here: https://webfiles.clarkcountynv.gov/Building%20&%20Fire%20Prevention/Codes/2018_IECC_Amendments.pdf. As of the date that this testimony was prepared, information provided by Nevada Building Officials indicates that southern Nevada jurisdictions are in the process of updating energy codes to IECC 2024, which will take effect in 2025; see https://nevadabuildingofficials.org/current-adopted-codes/.

[19] See page 145 of 390, Docket 11-07026, "Application of Sierra Pacific Power Company d/b/a NV Energy for approval of its 2011 Annual Demand Side Management Update Report as it relates to the Action Plan of its 2011-2030 Integrated Resource Plan," 10144.pdf (state.nv.us).

constantly improving the quality of energy savings curves, which in turn improves the accuracy and precision of M&V determinations.

16. Q. HOW HAVE 2023 ENERGY SAVINGS CURVES BEEN UPDATED?

A. ADM's methodology for 2023 energy savings curves is substantially similar to ADM's approach during the previous 12 years. ADM has developed project-specific curves for sampled projects, while non-sampled projects are represented by measure-market specific curves that are derived primarily from the California Commercial End-Use Survey ("CEUS").

For the subset of commercial projects in the M&V sample for which prescriptive algorithms were employed to determine ex-ante estimated savings ("prescriptive projects"), ADM's methodology for 2023 energy savings curves is the same as the methodology previously described for 2022 energy savings curves:

- ADM applied partially deemed savings when calculating ex-post verified energy savings; criteria used for applying partially deemed savings algorithms are explained in detail in the M&V reports included in this filing; and
- ADM did not use site-specific data to determine energy savings curves; instead, consistent with M&V methodology that has been accepted since 2019, ADM used deemed building type and equipment type curves that ADM developed from historical M&V results for projects that had been sampled in program years 2010 through 2018.

To describe the impacts of Nevada Power's 2023 Business Energy Services Program, ADM used a total of 57 unique curves, of which 22 were project-specific curves derived from primary data collected during M&V; the remaining 35 curves were building type-specific deemed curves developed from historical M&V results.

Similarly, ADM used 33 unique curves to describe the impacts of Sierra's 2023 Business Energy Services Program; of these, 13 curves were project-specific curves derived from primary data collected during M&V, while the remaining 20 were building type-specific deemed curves developed from historical M&V results.

ADM sampled many of the largest and most significant 2023 projects, as these benefit the most from customized energy savings curves. As with previous years, lighting efficiency improvement projects are a key driver of non-residential sector impacts. ADM has used the same site-specific lighting calculator since 2013. For M&V sample sites using custom building hours, the calculator constructs site-specific savings curves while also calculating project-level verified impacts. For those projects that utilize deemed hours, the calculator applies the appropriate building type-specific curve developed from previous M&V results.

17. Q. PLEASE DESCRIBE THE ENERGY SAVINGS CURVES THAT ADM PROVIDED FOR NV ENERGY FOR USE IN NV ENERGY'S COST EFFECTIVENESS MODELING.

A. For the ACE guru financial modeling – i.e., NV Energy's cost effectiveness modeling for DSM programs – ADM provided the appropriate energy savings curves for all 2023 DSM programs. The 2023 energy savings curves included program-level curves and subprogram-level curves. For example, the Energy Smart Schools Program has separate, subprogram-level curves for the behavioral subprogram versus the capital projects subprogram. Similarly, the DR programs have separate, subprogram-level curves for "Manage" device populations versus "Build" device populations.

ADM also provided the following normalized energy savings curves in support of NV Energy's "Distributed Energy Resources Analytics Toolset and Potential Study" project:

- Commercial DR Program curves – two curves each for Nevada Power and Sierra, sorted by DR event savings versus energy efficiency ("EE") savings from optimization algorithms.
- Residential DR Program curves – For each of the unique Nevada Power and Sierra device populations that control participants' air conditioning loads, there are two curves: one represents DR event savings while the other represents EE savings from smart thermostat optimization algorithms. There are additional non-air conditioning curves for DR events only: for Nevada Power, there are separate DR event curves for battery storage, pool pumps, and water heaters; for Sierra, there are separate DR event curves for battery storage and water heaters.
- Business Energy Services Program curves – separate (unique) curves for Nevada Power versus Sierra populations.
- Energy Smart Schools Program curves – unique curves for Nevada Power versus Sierra populations.
- Residential Direct Install Program curves – unique curves for Nevada Power and Sierra.
- Low Income Program curves – unique curves for Nevada Power and Sierra.
- Residential Codes and New Construction Program – unique curves for Nevada Power and Sierra.
- Residential Energy Assessments Program curves – unique curves for Nevada Power and Sierra.
- Home Energy Reports Program curves – unique curves for Nevada Power and Sierra.

- Energy Education Program – unique curves for Nevada Power and Sierra.
- Residential appliances measures – unique curves for Nevada Power and Sierra.
- Residential pool pump measures – one curve (Nevada Power only).
- Residential central air conditioning measures – unique curves for Nevada Power and Sierra.
- Room air conditioning measures – unique curves for Nevada Power and Sierra.
- DR battery storage curve – two curves representing different assumptions for battery efficiency.
- Commercial heating, ventilation, and air conditioning ("HVAC") measures – unique curves for Nevada Power and Sierra.
- Commercial lighting measures – unique curves for Nevada Power and Sierra.
- Commercial miscellaneous measures – unique curves for Nevada Power and Sierra.
- Commercial behind-the-meter ("BTM") battery storage measures – unique curves for Nevada Power and Sierra.
- Residential lighting measures – one (statewide) curve.
- Residential HVAC measures – unique curves for Nevada Power and Sierra.
- Residential domestic hot water measures – unique curves for Nevada Power and Sierra.
- Residential miscellaneous measures – unique curves for Nevada Power and Sierra.
- Residential BTM battery storage measures – unique curves for Nevada Power and Sierra.
- Residential electric vehicle managed charging measures – unique curves for each of the following populations: Nevada Power single-family, Nevada Power multifamily, Sierra single-family, and Sierra multifamily.

In ADM's judgement, all energy savings curves provided to NV Energy are appropriate for its cost effectiveness modeling for future, similar DSM programs and measures.

V. M&V USE OF AUTOMATED METERING INFRASTRUCTURE ("AMI") DATA

18. Q. WAS HOURLY AMI DATA USED FOR M&V ANALYSES FOR NV ENERGY'S 2023 DSM PROGRAMS? IF YES, PLEASE EXPLAIN HOW IT IS USED. IF NOT, PLEASE EXPLAIN WHY IT IS NOT USED.

A. Following is a description of AMI data used in M&V analyses for the 2023 DSM programs.

- Business Energy Services: AMI data was used for M&V analyses for five retro-commissioning projects. Energy simulations, engineering calculations, and field monitoring were the other most common analytical methods for evaluating this program (see Table 3-5 in the M&V report for this program).
- Commercial DR: AMI data was used to evaluate both the DR event demand reductions and kWh savings along with the annual energy savings attributed to smart thermostat technologies (see sections 3.2 and 3.3 in the M&V report for this program).
- Energy Smart Schools: AMI data was used for M&V analyses for Continuous Energy Improvement ("CEI") and Strategic Energy Management ("SEM") behavioral treatments. Energy simulations and engineering calculations were the other most common analytical methods for evaluating this program (see Table 3-3 in the M&V report for this program).
- Direct Install: AMI data was not used to evaluate this program. Engineering analyses were used to evaluate the measures in the program (see section 3.2 in the M&V report for this program).

- Energy Assessments: Monthly billing data[20] was used in mixed effects panel regression models to evaluate energy savings for the program components (see section 3.1 in the M&V report for this program).
- Energy Education: AMI data was not used to evaluate this program. Engineering analyses were used to evaluate the measures in the program (see section 3.2 in the M&V report for this program).
- Energy Reports: AMI data was not used to evaluate this program. Monthly billing data was sufficient to evaluate the energy savings for the program (see section 3.1 in the M&V report for this program).
- Home Energy Saver: AMI data was not used to evaluate this program. Engineering analyses were used to evaluate the measures in the program (see sections 3.1, 3.2, 3.3, and 3.4 in the M&V report for this program).
- Low Income: AMI data was not used to evaluate this program. Engineering analyses were used to evaluate the measures in the program (see section 3.2 in the M&V report for this program).
- Residential Codes and New Construction: AMI data was not used to evaluate this program. Engineering analyses were used to evaluate the measures in the program (see sections 3.5, 3.6, 3.7, and 3.8 in the M&V report for this program).
- Residential DR: AMI data was used in the DR event demand reductions and energy savings evaluation (see chapter 3 in the M&V report for this program).

VI. DR BATTERY STORAGE ANALYSIS

19. Q. PLEASE DESCRIBE ADM'S ANALYSIS OF THE BATTERY STORAGE COMPONENT OF THE 2023 RESIDENTIAL DR PROGRAM.

A. In 2023, NV Energy added non-thermostat devices to the Residential DR Program, including DR events for pool pumps, water heaters, and battery storage.

[20] Monthly billing data is NV Energy's aggregation of AMI data into monthly sums that are billed to customers.

With respect to the new DR battery storage measure, NV Energy's residential customers in both service territories can enroll existing batteries in the DR program. Customers subsequently earn incentives for participating in DR events, i.e., for allowing NV Energy to draw energy to the grid from customers' DR battery storage measures during DR events.

From August 28, 2023, to September 28, 2023, NV Energy conducted ten residential DR battery storage events, each of which lasted two hours. The first three events discharged the battery at a continuous three kW of demand, while the remaining seven events discharged a continuous five kW of demand during the event hours. Battery consumption was measured at the device level as the difference between the energy imported by the battery and the energy exported by the battery. Both data streams were measured in 15-minute intervals as Watt-hours, then converted to kWh by taking the average across each hour, quadrupling it, and dividing it by 1,000.

For weekday DR events, participating batteries' baseline load was calculated from batteries' average hourly discharge during the prior seven non-holiday weekdays. For weekend DR events, participating batteries' baseline load was calculated from batteries' average hourly discharge during the prior seven weekend days or holidays.

Nevada Power's 2023 DR battery storage events achieved maximum hourly verified demand reduction of 1.09 kW from one participating battery versus the baseline battery discharge. Detailed M&V findings regarding Nevada Power's DR battery storage events are provided in section 4.6.1 in the M&V report for 2023 the Residential DR Program.

Sierra's 2023 DR battery storage events achieved maximum hourly verified demand reduction of 9.06 kW from three participating batteries (i.e., an average of 3.02 kW per battery) versus the baseline battery discharge. Detailed M&V findings regarding Sierra's DR battery storage events are provided in section 4.10.1 in the same M&V report.

VII. LOW INCOME ANALYSES

20. Q. PLEASE DESCRIBE ADM'S ANALYSES RELATED TO NV ENERGY'S 2023 LOW INCOME PROGRAM AND LOW INCOME CUSTOMERS.

A. ADM provided an M&V analysis and report for NV Energy's 2023 standalone Low Income Program. ADM also assisted NV Energy with its analysis of the quantity of low-income customers that participated in the other 2023 DSM programs.

The standalone Low Income Program and the Home Energy Saver Program conducted outreach activities in 2023 to recruit low-income qualified customers for various energy efficiency products and services. The Low Income Program offered appliances and LEDs, while the Home Energy Saver Program offered an air conditioner tune-up measure for low-income customers. Both programs required proof of income qualification as described in the guidelines set out in the *NV Energy Low-Income Methodology Document*, which NV Energy had presented to the DSM Collaborative on August 20, 2020.

ADM analyzed the concatenated customer and site numbers (from DSMC tracking data) for all low-income qualified customers who participated in the 2023 standalone Low Income Program and the Home Energy Saver Program's air conditioner tune-up measure for low-income customers. ADM compared customer-

site numbers for known low-income qualified customers to customer-site numbers for all customers who participated in the 2023 Residential Direct Install, DR, Energy Assessments, Home Energy Reports, Home Energy Saver, and Residential Codes and New Construction Programs.

For the Nevada Power residential programs listed below, ADM found the following percentages of low-income qualified customers:

- Home Energy Saver – 9.99 percent;
- In-Home Energy Assessments – 0.45 percent;
- Direct Install – 0.42 percent;
- Online Energy Assessments – 0.11 percent;
- DR – 0.09 percent;
- Home Energy Reports – 0.00 percent; and
- Residential Codes and New Construction – 0.00 percent.

For the Sierra residential programs listed below, ADM found the following percentages of low-income qualified customers:

- Home Energy Saver – 20.45 percent;
- In-Home Energy Assessments – 0.24 percent;
- Direct Install – 0.23 percent;
- Online Energy Assessments – 0.15 percent;
- DR – 0.04 percent; and
- Home Energy Reports – 0.00 percent.

In 2023, through its Energy Education Program, NV Energy provided an energy efficient lighting kit ("Kit")[21] to customers who may reside in low- or limited-income households. ADM administered surveys to a representative sample of 2023 Kit recipients. Survey instruments adhered to the low-income qualifications defined in the *NV Energy Low-Income Methodology Document*, which NV Energy had presented to the DSM Collaborative on August 20, 2020. From the 2023 surveys, Kit recipients self-reported the following:

- 99.87 percent of Nevada Power Kit recipients were low-income qualified; and
- 100.00 percent of Sierra Kit recipients were low-income qualified.

NV Energy is required by SB448 Section 39[22]to report the proportion of 2023 Energy Smart Schools ("ESS") participants that are public schools located in a historically underserved community"[23] as defined by eligibility for free or reduced price lunches.[24] ADM found the following percentages:

- Nevada Power – 94.04 percent of the 2023 ESS program population;
- Sierra – 71.43 percent of the 2023 ESS program population.

[21] NV Energy provided one Kit per household; each Kit included four 9W LED bulbs and two 0.5W LED night lights.
[22] NRS 704.7836.
[23] See https://www.leg.state.nv.us/NRS/NRS-704.html#NRS704Sec7836. This requirement was established through Senate Bill 448 (2021) (https://www.leg.state.nv.us/Session/81st2021/Bills/SB/SB448_EN.pdf).
[24] "Nevada lawmakers (on December 15, 2022) approved… more than $28 million to fund an additional year of universal free school meals for the 2023-24 school year…" See https://thenevadaindependent.com/article/lawmakers-ok-another-year-of-free-school-lunch-using-federal-arp-money, https://www.leg.state.nv.us/App/InterimCommittee/REL/Interim2021/Meeting/24291?committeeId=1773, and https://www.leg.state.nv.us/App/InterimCommittee/REL/Document/28633.

VIII. AVOIDING DOUBLE-COUNTING OF SAVINGS FOR CROSS-PARTICIPANTS

21. Q. HOW DOES ADM ENSURE THAT ENERGY SAVINGS FOR CROSS-PARTICIPANTS ARE NOT DOUBLE COUNTED?

A. Cross-participants are customers who participated in more than one DSM program in a given program year. For example, a customer who concurrently participated in Residential Energy Assessments, Residential DR, and Direct Install Programs is a cross-participant in each program. ADM investigated cross-participation in our analyses for all programs to ensure that cross-participants' energy savings are not double-counted. The following example of a customer who is a cross-participant in the Residential Assessments Program, DR Program, and Direct Install Program demonstrates ADM's general methodology for ensuring that there is no double counting of savings:

- ADM separately calculates the direct install savings, which are subsequently reported for the Direct Install Program;
- If possible, ADM determines energy savings for DR Program measures using a regression model that excludes cross-participants. Alternatively, if excluding cross-participants results in an insufficient quantity of data for the regression analysis, then ADM includes cross-participants in the regression analysis but subtracts their Direct Install Program savings and reports the difference as the DR Program savings;
- If possible, ADM determines Residential Energy Assessments Program savings using a regression model without cross-participants. Alternatively, if excluding cross-participants results in an insufficient quantity of data for the regression analysis, then ADM includes cross-participants in the regression analysis but subtracts their DR Program savings and Direct Install Program savings and reports the difference as the Residential Energy Assessments Program savings.

IX. ONLINE ENERGY ASSESSMENTS PROGRAM

22. Q. DID ADM DETERMINE THAT THE ONLINE ENERGY ASSESSMENTS PROGRAM ACHIEVED SIGNIFICANT ENERGY SAVINGS IN 2023?

A. For the 2023 Online Energy Assessments Program, Nevada Power achieved ex-post verified annual energy savings of 4,117,409 kWh and Sierra achieved ex-post verified annual energy savings of 663,424 kWh.

23. Q. PLEASE DESCRIBE THE VARIABILITY THAT ADM HAS OBSERVED WHEN PERFORMING M&V ANALYSES FOR THE ONLINE ENERGY ASSESSMENTS PROGRAM.

A. Nevada Power's Online Energy Assessments Program has demonstrated variable ex-post annual energy savings during 2018 through 2023:

- Verified annual energy savings were 2,641,315 kWh in 2018 and 4,740,363 kWh in 2019.
- There were no statistically significant savings in 2020.
- Verified annual energy savings were 4,787,559 kWh in 2021.
- There were no statistically significant savings in 2022.
- Verified annual energy savings were 4,117,409 kWh in 2023.[25]

Sierra's Online Energy Assessments Program did not achieve statistically significant savings in 2018, 2019 or 2020, but subsequently achieved the following:

- Verified annual energy savings were 2,123,205 kWh in 2021, 5,556,164 kWh in 2022, and 663,424 kWh in 2023.[26]

[25] Notably, 2023 participants only included the subset of customers who completed the Home Profile Survey, whereas prior year participants included all customers who opened the Online Energy Assessments tool.
[26] Id.

24. Q. IN ADM'S OPINION, DO THE M&V FINDINGS FOR THE 2023 ONLINE ENERGY ASSESSMENTS PROGRAM REPRESENT OUTLIERS?

A. Given that there have been multiple years of verified savings for the Online Energy Assessments Program commingled with multiple years of no savings, it is difficult to determine if the M&V result for 2023 or any other single year is an outlier.

The Online Energy Assessments Program is a behavioral treatment that shows savings if numerous participants take actions that save energy in the same calendar year in which the participants used the Online Energy Assessments tool.

The annual timing of required M&V activities may contribute to this program's inconsistent year-to-year energy savings. M&V activities align with calendar years. Customer actions in response to behavioral treatments do not necessarily align with calendar years; a customer may delay energy saving actions for several months even if the Online Energy Assessments tool provided the impetus for those actions.

Further, people's actions and timing are influenced by their individual perceptions of costs, benefits, and economic uncertainties. Economic uncertainties in the post-pandemic period, potentially including 2023, have included supply chain issues, labor shortages, and persistent (albeit currently abating) inflation. During any program year, a given user of the Online Energy Assessments tool may be experiencing financial stresses or uncertainties while concurrently having favorable views and good intentions regarding energy conservation. One user may act rationally by promptly addressing energy conservation opportunities while another user may act rationally by delaying energy saving actions.

It is possible that a subset of users of the Online Energy Assessments tool need more time than a single calendar year to achieve energy saving actions that were impelled by the Online Energy Assessments tool. In 2023, ADM tested this hypothesis by conducting an exploratory regression analysis across multiple previous program years of participants. The purpose of the analysis was to determine if statistically significant savings are found if participants are allowed more time – e.g., possibly up to a year, on average – to achieve energy saving actions after having used the Online Energy Assessments tool. Appendix D in the M&V report for the 2023 Energy Assessments Program provides a discussion of ADM's exploratory regression analysis of longer-term savings for users of the Online Energy Assessments in previous program years.

X. HOME ENERGY REPORTS PROGRAM

25. Q. WHY ARE SAVINGS FOR THE HOME ENERGY REPORTS ("HERS") PROGRAM HIGHER IN 2023 THAN IN 2022?

A. The 2022 program year was the first year of the behavioral treatment for the current HERs cohort; whereas the 2023 program year was the second consecutive year of treatment of the same cohort. In ADM's experience evaluating similar HERs programs in Nevada and nationally, lower energy savings during the first year of treatment is expected and is typically followed by increased savings during the second year of treatment of the same cohort.

The characteristic of relatively low first-year energy savings can be observed by looking back at NV Energy's 2019 and 2020 behavioral programs. In the first year of treatment of the 2019 HERs cohort, which was a new cohort at the time, annual per household energy savings were 47.5 kWh for the Nevada Power treatment group and 43.8 kWh for the Sierra treatment group. During 2020, the second year

of treatment of the same cohort, annual per household energy savings increased to 94.9 kWh for the Nevada Power treatment group and 73.0 kWh for the Sierra treatment group.

26. Q. WAS THE TREATMENT DURATION FOR THE 2023 HERS PROGRAM GREATER THAN THE TREATMENT DURATION IN 2022?

A. Yes. The treatment duration for the HERs cohort was significantly longer during 2023 compared to 2022.

For Nevada Power, nearly all of the HERs cohort began receiving treatment in May 2022. For the Sierra HERs cohort, 2022 treatments commenced as follows: ten percent began in March 2022, ten percent began in April 2022, and the remainder began in May 2022. Thus, for both Nevada Power and Sierra, the 2022 treatment periods resulted in an average of approximately eight months of treatment data that were available for M&V analyses for the 2022 HERs program.

The same Nevada Power and Sierra HERs cohorts received treatment throughout all of 2023, resulting in an average of approximately 20 consecutive months of treatment data that were available for M&V analyses for the 2023 HERs program. Higher annual energy savings during 2023, the second year of treatment, correlates to the consecutive months of ongoing behavioral treatment.

27. Q. IN ADM'S OPINION, DO THE M&V FINDINGS FOR THE 2023 HERS PROGRAM REPRESENT OUTLIERS?

A. No. In ADM's judgement, it is logical that the average annual energy savings per household increased significantly in 2023, which was a full year of treatment that followed the prior program year's briefer (eight month) first-year treatment.

In 2023, the Nevada Power HERs treatment group achieved average annual energy savings of 369.3 kWh per home.[27] The 2023 average annual savings per home represents 2.27 percent of pre-treatment annual energy consumption (see section 5.1 in the M&V report for this program). For hot-climate residences that have substantial summer cooling loads that result in relatively high summer energy bills, 2.27 percent savings is not an outlier for HERs behavioral treatments.

In 2023, the Sierra HERs treatment group achieved an average of 116.1 kWh annual energy savings per home.[28] The 2023 average annual savings per home represents 1.14 percent of pre-treatment annual energy consumption (see section 5.1 in the same M&V report), which is not an outlier for HERs behavioral treatments.

XI. M&V DATA COLLECTION TOPICS

28. Q. DID THE COVID-19 PANDEMIC CEASE TO IMPACT M&V DATA COLLECTION ACTIVITIES IN 2023?

A. Yes. The COVID-19 pandemic did not impact M&V activities in 2023.

29. Q. IN 2023, HOW WAS M&V DATA COLLECTION ACCOMPLISHED?

A. ADM achieved the majority of 2023 M&V data collection through remote activities that included phone interviews and email conversations with customers. M&V analyses also utilized AMI data (remotely collected data) whenever possible.

[27] For the Nevada Power HERs cohort, prior-year (2022) savings per home averaged 5.1 kWh. However, the 2022 "Paper HERs" subset of the treatment group saved an average of 248.2 kWh per home. The reason overall average savings was only 5.1 kWh was due to ADM's finding of zero statistically significant savings for treatment group subsets other than the "Paper HERs" subset.

[28] For the Sierra HERs cohort, prior-year savings per home averaged 54.8 kWh.

ADM did not conduct any 2023 M&V onsite inspections or data collection at customers' residences, as all data needed for M&V analyses was collected without entering customers' homes. However, for Low Income and Direct Install Programs, ADM conducted onsite verification of the counts of replaced bulbs at the Las Vegas and Reno warehouses where the old bulbs were stored prior to their disposal.

For the Business Energy Services Program, ADM conducted M&V onsite inspections for two projects, which were the largest projects in each service area. For each M&V onsite inspection, ADM collaborated with NV Energy management and customers to ensure that ADM personnel used appropriate personal protective equipment in compliance with all site-specific requirements and all NV Energy and state of Nevada requirements.

M&V data collection for the Business Energy Services Program also included 41 phone interviews and nine email conversations with participants who completed energy conservation projects in 2023.

For the Energy Smart Schools Program, M&V data collection included email conversations with officials in two school districts that had implemented energy conservation projects for which ADM identified some uncertainties regarding the M&V data-of-interest.

30. Q. WHY WAS THE MAJORITY OF 2023 M&V DATA COLLECTED THROUGH REMOTE ACTIVITIES?

A. ADM strives to continually improve M&V processes and accuracy of reporting while respecting finite M&V budgets. During and after the COVID-19 pandemic, ADM increased the use of AMI data whenever it is equivalent to, or better than,

data that could be collected in the field. ADM also works closely with NV Energy and program implementers. For example, whenever implementers can collect data in the field that can be used in M&V analyses, ADM uses the implementer-collected field data to supplement or corroborate M&V analyses.

Remote M&V data collection is the financially prudent option if there is low uncertainty regarding the data-of-interest. For example, prior to the COVID-19 pandemic, ADM had planned to execute a multi-year monitoring study of effective full load hours ("EFLH") for residential air conditioning equipment in southern Nevada. After postponing the study for two years during the pandemic, the ADM team objectively critiqued our premises and considered the relative uncertainty of EFLH. ADM determined that there was low uncertainty regarding EFLH for residential air conditioning equipment. Independent, third-party M&V analysts had studied EFLH in southern Nevada for 15 years, and ADM had used AMI data to determine EFLH for multiple years. Across all the EFLH analyses, there were relatively small variances from year to year. Therefore, rather than spending several thousands of dollars to collect additional data, ADM reviewed 15 years of EFLH analyses to develop a deemed value for southern Nevada residential air conditioning equipment.

Onsite M&V data collection is the prudent option when there is high uncertainty regarding the data-of-interest. For example, onsite M&V data collection is required for large commercial projects for which there are numerous attributes, inputs, and usage areas that require detailed engineering calculations and/or energy modeling that are subject to potentially unique operations and energy loads.

As mentioned in the preceding Q&A, ADM's onsite verification of the bulbs replaced by the Low Income and Direct Install Programs is another example of M&V data collection that is considered prudent because (absent onsite verification) there is significant uncertainty regarding the efficiency of the replaced bulbs.

31. Q. WHEN ONSITE M&V DATA COLLECTION IS NEEDED, DO NV ENERGY'S CUSTOMERS COOPERATE WITH M&V EFFORTS?

A. Yes. Please note that this Q&A is included because the Regulatory Operations Staff ("Staff") of the Commission asked ADM this important question during a 2023 conversation that included NV Energy and statutory intervenors. Staff emphasized that, given that participating customers receive ratepayer-funded rebates, they are required to let ADM perform onsite M&V data collection.

ADM agrees that customers receiving ratepayer-funded rebates must cooperate with onsite M&V requirements as determined by the independent, third-party M&V contractor. ADM is confident that onsite M&V is performed prudently and effectively – and customers are almost universally cooperative and helpful. I cannot recall any examples of customer pushback during the past several years.

ADM strives to collaborate effectively with all parties, communicate in helpful ways, and optimize onsite data collection when it is required. ADM's basic approach is to respect customers. When phone interviews and email conversations are the best use of M&V resources and finite budgets (for M&V sample sites for which ADM has determined that there is relatively low uncertainty regarding the data-of-interest), ADM staff explains to customers that their collaboration and helpfulness may enable the ADM team to achieve accurate results without needing to go into their business for an onsite inspection. Thus, for relatively low

uncertainty M&V sample sites, ADM typically offers to remotely collect M&V data via phone interviews and email conversations. Most customers recognize that ADM is striving for efficiency and minimal intrusion if the customers, in turn, are diligent and helpful providing the required data. Customers also know that, if M&V data collection is not successful in the remote mode, ADM will go to customers' businesses to perform the more time-consuming and intrusive onsite inspection and data collection.

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

A. Yes.

EXHIBIT OLIVER-DIRECT-1

STATEMENT OF QUALIFICATIONS
ROBERT R. OLIVER
ADM ASSOCIATES, INC. (ADM)

417 W. Plumb Lane
Reno, NV 89509

Education

Bachelor of Science in Agricultural Economics and Business Management, Cornell University

Professional Experience

2010 to Present — **Director/Principal**
ADM Associates, Inc.

Responsible for evaluation, measurement and verification (EM&V) of Demand Side Management (DSM) portfolios including the full range of demand response (DR), energy efficiency (EE), and educational program offerings. In recent years, have provided analyses, oversight, direction, and consultation for EM&V scopes of work in various regions of the country, including the following.

- EM&V consulting services for commercial, industrial, agricultural, low-to-moderate income, and residential EE programs in Arkansas, California, Idaho, Kansas, Missouri, Nevada, New Jersey, New York, Ohio, Oklahoma, Utah, Washington, and Wyoming.
- DR programs in Kansas, Missouri, and Nevada.
- Various EM&V analyses and support for ADM's EM&V teams in numerous states.

Provide electric and gas utility clients technical services including DSM portfolio design and related analyses; also provide technical reference manual (TRM) review and participate in TRM and similar collaborative processes. Provide clients innovative analyses and methods for utilizing measure-level load shapes and program-level energy savings profiles to maximize accuracy of reporting for peak demand savings. Provide guidance and quality assurance for EM&V sampling to ensure rigorous sampling while prudently managing EM&V budgets and resources. Serve as lead writer, editor or peer reviewer for numerous EM&V reports and related technical documents.

2007 to 2009 — **Senior Program Manager**
Paragon Consulting Services

Responsibilities included EM&V tasks such as managing field engineering, data collection and data analysis activities, while also preparing EM&V work papers and reports for DSM programs.

2005 to 2007 — **Southwest Regional Manager**
Ecos Consulting, Inc.

Consulted for various southwestern utilities while responsible for providing clients DSM program design and execution. Successfully implemented innovative residential initiatives such as pool pump programs and ENERGY STAR® lighting and appliances programs.

2001 to 2005 — **Independent Consultant**

Provided consulting services to support the Nevada Task Force for Renewable Energy and Energy Conservation (2004-2005). Also advised various clients on strategies for increasing market penetration of renewable energy systems and managing internal and external communications.

AFFIRMATION

Pursuant to the requirements of NRS 53.045 and NAC 703.710, ROBERT R. OLIVER, 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: May 31, 2024

ROBERT R. OLIVER