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*Attorneys for Idaho Clean Energy Association, Inc.*

**BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION**

IN THE MATTER OF IDAHO POWER  
COMPANY'S APPLICATION FOR  
AUTHORITY TO ESTABLISH NEW  
SCHEDULES FOR RESIDENTIAL AND  
SMALL GENERAL SERVICE  
CUSTOMERS WITH ON-SITE  
GENERATION

**Case No. IPC-E-17-13**

**DIRECT TESTIMONY OF STEPHEN WHITE**

**ON BEHALF OF**

**IDAHO CLEAN ENERGY ASSOCIATION, INC.**

ORIGINAL

1 Q. Please state your name and business address.

2 A. My name is Stephen White and my business address is 3778 N Plantation River Drive  
3 #102, Boise, ID 83703.

4 Q. On whose behalf are you testifying?

5 A. I am testifying on behalf of the Idaho Clean Energy Association.

6 Q. What is the purpose of your testimony?

7 A. I am providing testimony to describe the financial dynamics affecting customers when  
8 considering rooftop solar and to characterize the impact of this filing on those investment  
9 decisions.

10 Q. Please describe your educational background.

11 A. I hold a bachelor's degree in finance with honors from the University of Georgia and a  
12 Masters of Business Administration from the Harvard Business School.

13 Q. What is your profession?

14 A. I am a Chartered Financial Analyst, which is the professional credential for investment  
15 management and research. Since 2003, I have been the co-owner Berkeley, Inc. Our mission is  
16 to provide objective financial counsel in the best interest of our clients; legally, we act as a  
17 fiduciary for our clients. My partner leads our financial planning services, and I lead our  
18 investment management services. We provide advice on various financial decisions that arise for  
19 our clients.

20 Q. How does your profession relate to this filing?

21 A. My expertise in evaluating investments and investment instruments extends to evaluating  
22 investments in rooftop solar. Interest in rooftop solar investments has grown during my time here  
23 in Boise. By 2010, I was receiving inquiries from people interested in investing in rooftop solar.

1 In 2010, I opted to install an array on our office building, partly to gain first-hand experience and  
2 thereby be in a better position to advise clients. People and organizations in Idaho continue to  
3 seek my recommendations regarding investments in rooftop solar.

4 Q. How do customers typically think about the financial benefits of rooftop solar?

5 A. At the most basic level, people considering rooftop solar see an opportunity to pre-pay at  
6 a known cost for electricity to be generated over time. For example, when my firm invested in  
7 solar in 2010, we had a net cost of \$14,415 for a system projected to generate 184,000 kWh over  
8 30 years, so we paid 8 cents per kWh upfront for electricity which we are generating over time  
9 and thereby reducing our consumption. For clients with high electricity bills who are paying Tier  
10 3 rates, which is 12.4 cents in the summer for Residential, the opportunity to lower usage in the  
11 summer is particularly appealing.

12 People who consider rooftop solar also have different priorities. While some clients are  
13 simply considering whether it's a good way to invest, others are looking for ways to take control  
14 of their future living costs. They are concerned about power inflation rates relative to their future  
15 income, and their priority is to minimize exposure to power inflation rates.

16 Note that there are many options now available for financing solar installations. My  
17 direct experience relates to small organizations and people considering purchasing rooftop solar  
18 outright, as opposed to financing the purchase.

19 Q. Could you walk us through an example of how on-site generation can impact a  
20 customer's electricity bill? As a sample day, please consider July 7, 2017, which was the day  
21 Idaho Power hit peak summer demand.

22 A. On July 7, our Small General Service account was downloading electricity for 19 hours  
23 of the day and uploading for 5 hours. Our solar array generated roughly 22 kWh. Of that on-site

1 generation, we consumed 85% behind the meter, which reduced the total kWh we downloaded  
2 from the grid and lowered our volumetric bill by \$1.87 that day (assuming a Tier 1 rate of  
3 \$0.09907). This reduced consumption is similar to how our solar attic fan improved our  
4 efficiency and enabled us to download less from the grid. We exported 15% of the day's on-site  
5 generation to the grid during those 5 hours the meter ran backward. Our exported kWh offset  
6 consumption that night, which saved us \$0.34. So in total, we lowered our volumetric bill by  
7  $\$1.87 + \$0.34 = \$2.21$ . (See Exhibit 808)

8 Recall we had installed the system in 2010, at which time we pre-paid for future  
9 electricity at roughly \$.08 per kWh. In sum, we paid about \$1.76 in 2010 in order to save \$2.21  
10 on July 7, 2017.

11 Q. Is that a typical day?

12 A. No, our daily production rate is exceptionally high in summer. For the month of  
13 December, we used the grid in a one-way direction for 98% of the hours in the month (see  
14 Exhibit 809).

15 Q. Let's discuss how you evaluate an investment in on-site generation, assuming the  
16 customer would be paying upfront and not financing the installation. What are the financial  
17 components?

18 A. In general, the fundamental elements of any investment decision are risk and return. For  
19 rooftop solar, the return involves the projected value of the kWh to be generated relative to the  
20 upfront investment. As an investment analyst, I focus on the Return on Investment (ROI). The  
21 higher the associated risk, the higher the return needs to be to motivate someone to invest.

22 When helping a customer evaluate a rooftop solar investment, I look at the gross upfront  
23 purchase price adjusted by the cash value of the Federal tax credit. I convert State tax deductions



1 and, when applicable, convert depreciation charges to dollars using the client's marginal tax  
2 bracket. Though a customer might be reducing usage from a top tier price, if some of that  
3 production is exported it more typically offsets usage at a low tier price or during non-summer  
4 months, so using a weighted-average kWh rate is a simplifying assumption to arrive at a dollar  
5 value of that year's production. The projected dollar values take into account an assumed power  
6 inflation rate and annual degradation in power output.

7 Q. Do you perceive rooftop solar to be a risky or low risk investment?

8 A. In the past, an investment in rooftop solar has appealed to risk-averse customers. The  
9 upfront cost of the system is known, the technology is stable and reliable, the future production  
10 of the system is fairly predictable, and maintenance costs are negligible. People particularly  
11 value the idea of getting control over their energy costs.

12 For example, I often have discussions with clients planning for retirement. With interest  
13 rates so low, fixed income investment opportunities with similar stability offer returns of roughly  
14 2-3% per year. Clients compare that to the ROI on rooftop solar projects, as well as note  
15 historical power inflation rates. Many have concerns that the cost of fossil-based electricity and  
16 changing water flows in Idaho will further increase their electricity costs over the next 30 years.  
17 Rooftop solar gives people a choice to invest in something with good visibility to the costs and  
18 production.

19 Q. Please describe the greatest sources of uncertainty involved in evaluating an investment  
20 in on-site generation and how this filing relates to that uncertainty.

21 A. A policy change that would charge net metering customers for fixed costs in a manner  
22 differently than standard customers would undermine the value of all rooftop solar projects. A  
23 basic assumption behind an investment in on-site generation is that you pay once for the

1 electricity you use. From the customer's perspective, the cost of every kWh they produce is fixed  
2 – it's the cost per kWh of their on-site generation. So when a customer produces and consumes a  
3 kWh behind the meter, the customer has already paid for it once. If the customer also has to pay  
4 Idaho Power for revenue lost because the customer did *not* download from the grid, then the  
5 economics for the customer fall apart. It's not a good investment to pay twice for your electricity.

6 Approval of this filing would make the investment analysis highly uncertain. That is,  
7 based on the best data-driven forecast I could do, the residual uncertainty around the assumption  
8 for future net metering rates would be so high that it would break the majority of investment  
9 decisions for rooftop solar.

10 Q. In the mid-term timeframe, how would approval of the filing impact investment decisions  
11 in rooftop solar?

12 A. Approval of this filing would create a Wait-and-See period during which potential  
13 rooftop solar customers know they will be treated differently, but do not know how they will be  
14 treated. Through other channels, Idaho Power has conveyed intent to change net metering rates  
15 in such a way that would undo the economics of rooftop solar. Given the threat of imminent,  
16 worst-case changes to rate design, customers would opt to delay or invest their money in  
17 something else.

18 Q. Idaho Power states in its Answer to ICEA Motion to Dismiss that, "No additional  
19 uncertainty will be created because of the Commission issuing a determination on customer  
20 classifications." Do you agree?

21 A. No. Risk and uncertainty are specific to one's perspective. From Idaho Power's  
22 perspective, an approval of this filing may not add uncertainty to Idaho Power's decisions.  
23 However, my expertise is from the perspective of people considering an investment in rooftop

1 solar, and approval of this filing would definitely add a significant amount of risk and  
2 uncertainty to those decisions.

3 In addition, Idaho Power seems to equate general uncertainty across the entire residential  
4 and small general service ("R&SGS") class with the uncertainty created by establishing a  
5 separate customer class. These are not the same. The general risk that power rates and rate  
6 structure will increase is a common risk made manageable, in part, because rate changes occur  
7 across a broad class.

8 A new customer class creates much more uncertainty. Idaho Power has not indicated  
9 what type of treatment they seek for members of the class. This itself creates a great amount of  
10 uncertainty; potential members of the class know they will be treated differently but cannot  
11 assess the range of possible treatment. The proposed new customer class will be small. Smaller  
12 classes are inherently subject to greater volatility. Finally, the proposed new customer class will  
13 have no history. With no history, it is difficult to develop reasonable assumptions about future  
14 power rates.

15 Q. Are there additional factors that add uncertainty to this filing?

16 A. While the filing before the Commission focuses on bi-directional grid use as justification  
17 for treating net metering customers differently, the Company does not focus on remedies specific  
18 to bi-directional grid use. The Company publishes the message to customers that net metering  
19 customers should not be allowed to reduce volumetric bills below the utility's average cost per  
20 month of \$65 for residential. See Exhibit 808. Approval of this filing in the context that Idaho  
21 Power is floating these intentions further augments uncertainty.

22 Q. Can you describe an example of how uncertainty affected an investment decision?

23 A. An organization recently asked me to present recommendations regarding the installation

1 of a solar array to offset a portion of their electric bill. I ran the numbers, and the opportunity  
2 presented a very good return on investment. However, at least half the discussion and the  
3 majority of the concerns centered on the filing before the Commission, including a wide range of  
4 speculations on how the economics of the investment might imminently change.

5 Q. Did the organization invest in the rooftop solar project?

6 A. No, they did not. Though the return on investment was favorable, the uncertainty  
7 associated with future changes to net metering as well as other factors discouraged the  
8 organization from investing.

9 Q. Idaho Power states in its Response to ICEA Motion to Dismiss, page 17, "Further, Idaho  
10 Power is increasingly aware that customers are relying on a wide range of investment payback  
11 information that could be misleading." Describe how this filing would impact this concern posed  
12 by Idaho Power.

13 A. Idaho Power focuses on concerns regarding projected power inflation rates, yet the ability  
14 to project power inflation rates is not affected by this filing.

15 Putting customers with on-site generation into a separate class would greatly complicate  
16 the financial analysis of rooftop solar as an investment, and the small rate class would have  
17 higher volatility. Approval of this filing would increase the range of projections, not decrease it.

18 Q. What factors influence your prediction of the eventual outcomes for net metering rate  
19 design in Idaho?

20 A. To predict future rates, I consider indicators from state policy, Idaho culture, the  
21 Commission, stakeholders, and Idaho Power. When I read the PUC's 2013 decision on IPC-E-  
22 12-27, I gather that the Commission gives weight to perspectives from all stakeholders and  
23 balances the imperfection of rate design with costs and practicality. When I read the most current

1 Idaho Energy Plan, it encourages investment in customer-owned generation and advocates for  
2 non-discriminatory policies for net metering. Stakeholders advocate that the Commission should  
3 not discourage customer-owned generation, and Idaho culture is very rooted in independence and  
4 freedom of choice. However, Idaho Power conveys intent of charging onerous fees to net  
5 metering customers, even those with zero export systems. So, the preponderance of indicators  
6 would suggest future net metering rates would reasonably allow customers with on-site  
7 generation to benefit from their investment, but approval of this filing would increase the risk  
8 that Idaho Power will have the influence needed to undo the economics of investing in rooftop  
9 solar.

10 Q. If this filing were approved, how would that impact your ability to advise clients?

11 A. Approval of the filing would put advisers like me in a very difficult position. A fact-  
12 based, evidence-driven prediction would be that net metering rate design should not change to a  
13 degree that would suddenly turn what has heretofore been a good investment into a bad one.  
14 However, Idaho Power shows intent of changing net metering policy in a manner that would  
15 undo the economics of the investment. So either, 1) I discourage customers from an investment  
16 that offers benefits they value, and I steer them toward less appealing options, or 2) I risk  
17 underestimating the downside impact of Idaho Power's intentions for net metering policy and I  
18 offer clients investment opportunities for which future changes cause them to regret.

19 In other words, I currently base recommendations on spreadsheets. If the filing were  
20 approved, a crystal ball might be more useful. My personal credibility is the basis for my  
21 business - when the stakes go up and the predictability goes down, it puts a heavy burden on all  
22 of us who make those predictions.

23 Q. Is there additional long-term risk or uncertainty created by this filing beyond the Wait-



1 and-See period you described?

2 A. The number of net metering customers in the proposed classes would be very low relative  
3 to standard customers. My perception is that such a small rate class would be more vulnerable to  
4 future changes in rates and rate structure. While Idaho Power has raised concerns about the range  
5 of predictions of power inflation rates, I perceive inflation rates for standard customers to be  
6 more predictable than future rates for net metering if such customers were put in a separate class.  
7 As described earlier, the higher the risk involved in any investment, the higher the return needed  
8 to motivate an investor. Putting net metering customers into a separate class would burden the  
9 market with higher risk regarding future rates, thereby driving down the profitability of the  
10 rooftop solar installation industry.

11 Q. Do you have any recommendations to the Commission?

12 A. I would respectfully encourage the Commission to:

- 13 • Reject the Company's proposal to create two new rate classifications for net metering  
14 customers.
- 15 • Ensure non-discriminatory policies for on-site generation. In particular, ensure that future  
16 rate proposals do not undermine the basic economics of solar investments by reducing a  
17 rooftop solar owner's ability to offset his or her consumption behind the meter.

18 Q. Does this conclude your direct testimony?

19 A. Yes.

## CERTIFICATE OF SERVICE

I certify that on December 22, 2017, a true and correct copy of the DIRECT TESTIMONY OF STEPHEN WHITE was served upon all parties of record in this proceeding via the manner indicated below:

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Preston N. Carter

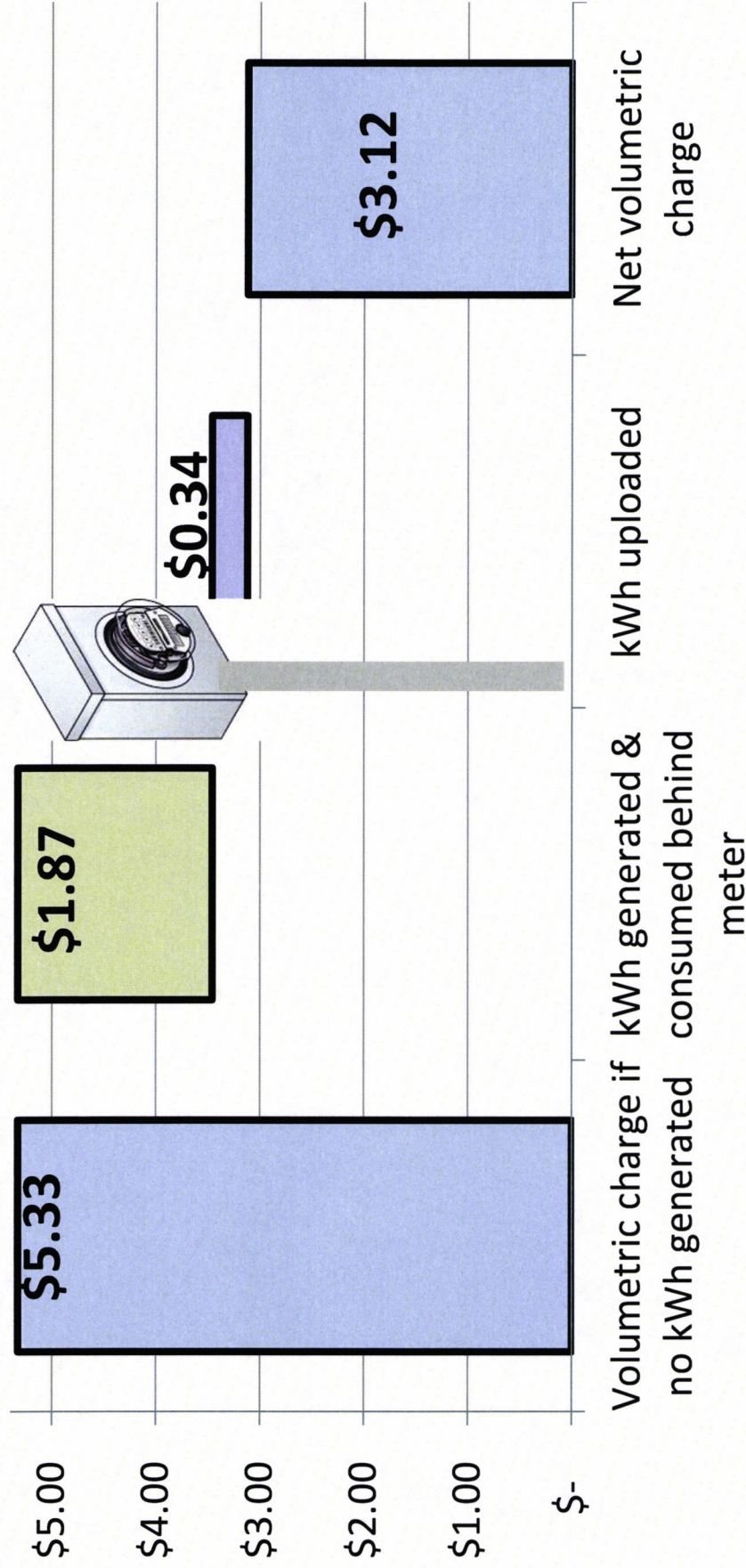
**EXHIBIT 808**



# Sources of Savings for a Small General Service Net Metering Customer

## July 7, 2017

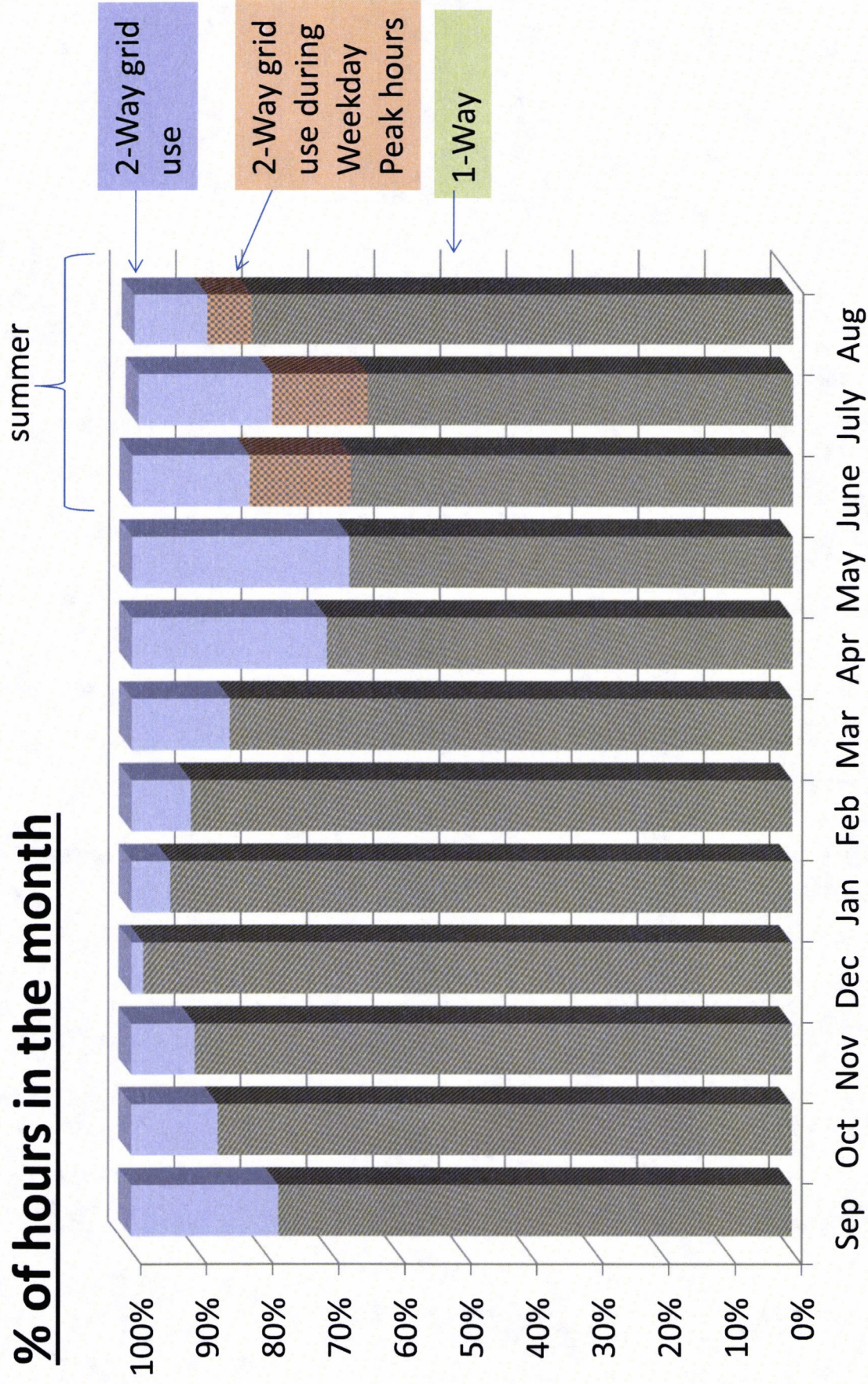
This graph shows the reduction in volumetric charges resulting from the customer's solar array, starting with the volumetric charge the customer would pay with no solar production. Some savings resulted from kWh produced and consumed behind the meter, some savings resulted from kWh uploaded onto the grid. Analysis uses customer production data as well as IPC hourly data available to the customer through the utility's online account.



# **EXHIBIT 809**



# % of hours in the month



Source: Idaho Power's hourly usage data for the witness's account