0000178653

RECEIV
AZ CORP COMMISSION
DOCKET CONTROL

2017 APR -3 P 4: 29

Arizona Corporation Commission
DOCKETED

APR 3 2017

DOCKETED BY
GB

ORIGINAL

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
TOM FORESE - CHAIRMAN
BOB BURNS
DOUG LITTLE
ANDY TOBIN
BOYD W. DUNN

IN THE MATTER OF THE APPLICATION OF ARIZONA PUBLIC SERVICE COMPANY FOR A HEARING TO DETERMINE THE FAIR VALUE OF THE UTILITY PROPERTY OF THE COMPANY FOR RATEMAKING PURPOSES, TO FIX A JUST AND REASONABLE RATE OF RETURN THEREON, TO APPROVE RATE SCHEDULES DESIGNED TO DEVELOP SUCH RETURN.	DOCKET NO. E-01345A-16-0036
IN THE MATTER OF FUEL AND PURCHASED POWER PROCUREMENT AUDITS FOR ARIZONA PUBLIC SERVICE COMPANY	DOCKET NO. E-01345A-16-0123 **NOTICE OF FILING OF TESTIMONY OF PAUL WALKER IN SUPPORT OF SETTLEMENT AGREEMENT**

REP America d/b/a/ ConservAmerica ("ConservAmerica") submits the Testimony of Paul Walker in support of the Settlement Agreement in this docket.

RESPECTFULLY SUBMITTED this 3rd day of April, 2017.

Snell & Wilmer, L.L.P.

By _____
Timothy J. Sabo
One Arizona Center
400 East Van Buren Street
Phoenix, Arizona 85004

Attorney for REP America d/b/a/ ConservAmerica

Original and 13 copies of the foregoing
filed this 3rd day of April 2017, with:

Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Copies of the foregoing hand-delivered/mailed/e-mailed
this 3rd day of April 2017, to:

Teena Jibilian,
Administrative Law Judge
Hearing Division
Arizona Corporation Commission
400 West Congress
Tucson, Arizona 85701

Maureen Scott
Legal Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Elijah Abinah, Director
Utilities Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007
legaldiv@azcc.gov
JXHatch-miller@azcc.gov
tbroderick@azcc.gov
chains@azcc.gov
wvancleve@azcc.gov
eabinah@azcc.gov
tford@azcc.gov
evanepps@azcc.gov
cfitzsimmons@azcc.gov
kchristine@azcc.gov
mscott@azcc.gov
Consented To Service By Email

Thomas A. Loquvam
Thomas L. Mumaw
Melissa M. Krueger
Pinnacle West Capital Corporation
P.O. Box 53999, MS 8695
Phoenix, AZ 85072
Thomas.loquvam@pinnaclewest.com
Thomas.mumaw@pinnaclewest.com
Melissa.kruegar@pinnaclewest.com
Amanda.ho@pinnaclewest.com
Debra.orr@aps.com
Consented To Service by Email

Patrick Black
Fennemore Craig, PC
2394 East Camelback Road, Suite 600
Phoenix, Arizona 85016
pblack@fclaw.com
khiggins@energystrat.com
Consented To Service By Email

Greg Eisert, Director
Steven Puck, Director
Government Affairs
Sun City Homeowners Association
gregeisert@gmail.com
steven.puck@cox.net
Consented To Service By Email

Timothy M. Hogan
Arizona Center for Law in the Public Interest
202 E. McDowell Road, Suite 153
Phoenix, Arizona 85004
thogan@aclpi.org
ken.wilson@westernresources.org
schlegelj@aol.com
ezuckerman@swenergy.org
bbaatz@aceee.org
briana@votesolar.org
cosuala@earthjustice.org
dbender@earthjustice.org
cfitzgerrell@earthjustice.org
Consented To Service By Email

Meghan H. Grabel
Osborn Maledon, PA
2929 North Central Avenue
Phoenix, Arizona 85012
mgrabel@omlaw.com
gyaquinto@arizonaic.org
Consented To Service By Email

Patricia Ferre
P.O. Box 433
Payson, Arizona 85547
pFerreact@mac.com
Consented To Service By Email

Richard Gayer
526 W. Wilshire Drive
Phoenix, Arizona 85003
rgayer@cox.net
Consented To Service By Email

Warren Woodward
200 Sierra Road
Sedona, Arizona 86336
w6345789@yahoo.com

Consented To Service By Email

Anthony L. Wanger
Alan L. Kierman
Brittany L. DeLorenzo
IO Data Centers, LLC
615 North 48th Street
Phoenix, Arizona 85008

Craig A. Marks
Craig A. Marks, PLC
10645 N. Tatum Blvd., Suite 200-676
Phoenix, Arizona 85028
craig.marks@azbar.org
pat.quinn47474@gmail.com
Consented to Service by Email

Albert Gervenack
Rob Robbins
Sun City West Property Owners & Residents Association
13815 Camino Del Sol
Sun City West, Arizona 85375
Al.gervenack@porascw.org
Rob.robbins@porascw.org
Consented to Service by Email

Tom Harris, Chairman
AriSEIA
2122 W. Lone Cactus Dr., Suite 2
Phoenix, AZ 85027
Tom.harris@ariseia.org
Consented to Service by Email

Cynthia Zwick
Arizona Community Action Association
2700 North 3rd Street, Suite 3040
Phoenix, Arizona 85004
czwick@azcaa.org
khengehold@azcaa.org
Consented To Service By Email

Daniel W. Pozefsky
Chief Counsel
Residential Utility Consumer Office
1110 West Washington, Suite 220
Phoenix, AZ 85007

Jason Y. Moyes
Jay I. Moyes
Moyes Sellers & Hendricks
1850 N. Central Ave., Suite 1100
Phoenix, Arizona 85004
jasonmoyes@law-msh.com
jim@harcuvar.com
jimoyes@law-msh.com

Consented To Service By Email

Kurt J. Boehm
Jody Kyler Cohn
Boehm, Kurtz & Lowry
36 E. Seventh Street, Suite 1510
Cincinnati, OH 45202

John William Moore, Jr.
7321 North 16th Street
Phoenix, AZ 85020

Charles Wesselhoft, Deputy County Attorney
Pima County Attorneys' Office
32 North Stone Ave., Suite 2100
Tucson, Arizona 85701
Charles.Wesselhoft@pcao.pima.gov
Consented To Service By Email

Giancarlo G. Estrada
Kamper Estrada, LLP
3030 N. 3rd Street, Suite 770
Phoenix, AZ 85012
gestrada@lawphx.com
kfox@kfwlaw.com
kcrandall@eq-research.com
Consented To Service By Email

Court S. Rich
Rose Law Group pc
7144 E. Stetson Dr., Suite 300
Scottsdale, AZ 85251
crich@roselawgroup.com
hslaughter@roselawgroup.com
Consented To Service By Email

Scott Wakefield
Hienton & Curry, PLLC
5045 N 12th Street, Suite 110
Phoenix, Arizona 85014-3302
swakefield@hclawgroup.com
mlougee@hclawgroup.com
stephen.chriss@wal-mart.com
greg.tillman@wal-mart.com
chris.hendrix@wal-mart.com
Consented To Service By Email

Lawrence V. Robertson, Jr.
210 W. Continental Road, Suite 216A
Green Valley, Arizona 85622
tubaclawyer@aol.com
Consented To Service By Email

Nicholas J. Enoch
Kaitlyn A. Redfield-Ortiz

Emily A. Tornabene
Lubin & Enoch, PC
349 North Fourth Avenue
Phoenix, Arizona 85003

Greg Patterson
Munger Chadwick
916 West Adams, Suite 3
Phoenix, Arizona 85007

Albert H. Acken
Sheryl A. Sweeney
Samuel L. Lofland
Ryley Carlock & Applewhite
One N. Central Avenue, Suite 1200
Phoenix, AZ 85004
aacken@rcalaw.com
ssweeney@rcalaw.com
slofland@rcalaw.com
jjw@krsaline.com
Consented To Service By Email

Thomas A. Jernigan
Karen White
Ebony Payton
Federal Executives Agencies
U.S. Airforce Utility Law Field Support Center
139 Barnes Dr., Suite 1
Tyndall Air Force Base, Florida 32403
Thomas.jernigan.3@us.af.mil
Ebony.payton.ctr@us.af.mil
Andrew.unsicker@us.af.mil
Lanny.zieman.1@us.af.mil
Natalie.cepak.2@us.af.mil
Consented To Service By Email

John B. Coffman
John B. Coffman, LLC
871 Tuxedo Blvd.
St. Louis, Missouri 83119

Ann-Marie Anderson
Wright Welker & Pauole, PLC
10429 South 51st Street, Suite 285
Phoenix, AZ 85004
aanderson@wwpfirm.com
sjenning@aarp.org
aallen@wwpfirm.com
Consented To Service By Email

Robert L. Pickels, Jr.
Sedona City Attorney's Office

102 Roadrunner Dr.
Sedona, Arizona 86336
rpickles@sedonaaz.gov
Consented To Service By Email

Garry D. Hays
Law Offices of Garry D. Hays
2198 E. Camelback Rd., Suite 305
Phoenix, Arizona 85016
ghays@lawgdh.com
Consented To Service By Email

Thomas E. Stewart
Granite Creek Power & Gas LLC
Granite Creek Farms LLC
5316 E. Voltaire Ave.
Scottsdale, AZ 85254
tom@gcfaz.com
Consented To Service By Email

Dennis M. Fitzgibbons
Fitzgibbons Law Offices, PLC
115 E. Cottonwood Lane, Suite 150
P.O. Box 11208
Casa Grande, AZ 85130
denis@fitzgibbonslaw.com
Consented To Service By Email

By _____
4848-5508-0262

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
TOM FORESE - CHAIRMAN
BOB BURNS
DOUG LITTLE
ANDY TOBIN
BOYD W. DUNN

IN THE MATTER OF THE APPLICATION OF ARIZONA PUBLIC SERVICE COMPANY FOR A HEARING TO DETERMINE THE FAIR VALUE OF THE UTILITY PROPERTY OF THE COMPANY FOR RATEMAKING PURPOSES, TO FIX A JUST AND REASONABLE RATE OF RETURN THEREON, TO APPROVE RATE SCHEDULES DESIGNED TO DEVELOP SUCH RETURN.	DOCKET NO. E-01345A-16-0036
IN THE MATTER OF FUEL AND PURCHASED POWER PROCUREMENT AUDITS FOR ARIZONA PUBLIC SERVICE COMPANY	DOCKET NO. E-01345A-16-0123

Testimony of Paul Walker

on Behalf of

ConservAmerica

April 3, 2017

TABLE OF CONTENTS

I. Introduction 1

II. The Settlement Agreement should be approved 1

III. The settlement adopts a modernized rate design that will reduce costs and emissions while increasing fairness 3

IV. The AZ Sun II program will provide a rooftop solar option to low and moderate income Arizonans 11

Exhibit:

1. Palo Verde Peak Pricing 2015

2. PJM Western Hub June 2015

3. Comparison of APS low income and high income zip codes

I. Introduction.

Q. Please state your name and business address.

A. My name is Paul Walker. My business address is 209 East Baseline Road, Suite E-102 - 4 Tempe, Arizona 85283.

Q. And are you the same Paul Walker who testified earlier in this proceeding?

A. I am.

Q. I noticed that your address is different – other than that, has anything in your employment, skills, or background changed?

A. No.

Q. What is the purpose of your testimony?

A. I urge the Commission to adopt the settlement that was reached by 29 parties—including Arizona Public Service, Staff of the Commission, the Residential Utility Consumers Office, the Arizona Utility Ratepayer Alliance (AURA), Arizona Solar Energy Industries Association, Vote Solar, the Arizona Community Action Association (ACAA), Western Resource Advocates, the Energy Freedom Coalition of America, and ConservAmerica. There is quite a diversity of opinion in just that brief list; to say nothing of the full list of 29 parties.

II. The Settlement Agreement should be approved.

Q. Was the settlement process open to all parties?

A. Yes. All parties were invited to the settlement meetings, and numerous parties chose to participate. Indeed, so many parties participated that only Hearing Rooms 1 and 2 were capable of holding the settlement meetings due to the sheer number of participants.

Q. Did all parties have the opportunity to participate in the settlement process?

A. Yes. Commission Staff was particularly diligent in ensuring that all parties had the opportunity to raise and respond to issues throughout the process. Each party that chose to attend the settlement meetings was given multiple opportunities to express their views. The resulting process was certainly open and inclusive. I do not believe anyone could say their viewpoint was not heard by all parties in the settlement room.

Q. Do you believe the settlement is in the public interest?

A. I do.

Q. Why does ConservAmerica believe the settlement is in the public interest?

A. A good test of the public interest is whether parties with divergent interests support the outcome—in this case the parties in support come from many different perspectives. I think it's fair to say that the solar industry and APS sought to establish a *détente* after nearly a decade of battling.

As everyone involved with the Commission knows, that battle between APS and the solar industry has caused a lot of damage—on all sides. The "Death Spiral" and the scorched earth tactics led to a lot of things, most of them bad—share price collapses, litigation, vicious politics—but it also led to this settlement, which, if approved will become the template for a different future.

Q. What are the key issues for ConservAmerica in this settlement?

A. It achieves two critical goals for ConservAmerica: First, it makes a giant leap forward with rate design—while it retains the standard rate option, it requires new customers to at least test 21st Century rate design. If approved, future customers will have to at least try

either a Time-of-Use plan or a Demand Charge plan; if they wind up unhappy, they can go back to the 1980's rate design after a few months.

While not ideal from ConservAmerica's perspective, it is real progress toward the world we actually inhabit in the 21st Century, i.e., a world with constraints but also with the technology to manage and overcome those constraints.

Secondly, the settlement provides for social equity in the provision of solar power. For too long, low and moderate income households have been forced to pay taxes and subsidies to support the expansion of rooftop solar—while themselves having zero chance to participate.

This is an issue that has bothered me since 2001 when I was serving as then-Commissioner Marc Spitzer's Advisor at the Commission. It was clear to me then that the subsidy scheme was going to become a Reverse Robin Hood scenario. And it did—with 95 percent of rooftop solar installations in the U.S. going onto the homes of the wealthiest 60 percent.

The settlement before the Commission includes AZ Sun II – which will provide at least $10 million a year for rooftop solar directed to low-to-moderate income households and communities.

III. <u>The settlement adopts a modernized rate design that will reduce costs and emissions while increasing fairness</u>.

Q. Why is a move toward demand and time-of-use rate design so important to ConservAmerica?

A. Because a modernized rate design is important for reducing emissions, and for addressing the social equity issues raised by the solar cost shift (the confluence of antiquated volumetric rate design and increasing rooftop solar). I explored these topics at some length in my direct rate design testimony.

Fundamentally, rate design shapes customer behavior—and customer behavior shapes utility system design and operation—and utility system design and operation shape costs (both the seen costs of rate base, OpEx, and customer bills and the unseen costs of emissions).

Q. You mentioned emissions. Do you mean carbon emissions?

A. Not exclusively. ConservAmerica accepts the reality of climate change and believes that appropriate, economically rational steps must be taken to reduce carbon emissions, while also preserving our economy and quality of life. But carbon is not the only emissions issue—mercury, PM-10 and other emissions also exist. That is why ConservAmerica supports our "Zero Regrets energy Policy",[1] which is based on making all zero emissions energy production tax-free—solar, wind, nuclear, hydro, geothermal. This avoids government picking and choosing which technologies to support, rather it focuses on the outcome—zero emissions—and allows the market to determine how to get there. It also avoids the convoluted and excessively regulatory approach of the "Clean Power Plan".[2]

Q. How can rate design reduce emissions?

---

[1] http://conservamerica.org/wp-content/uploads/2017/01/Zero-Regrets-Energy-Policy-v2.pdf

[2] For ConservAmerica's comments on the President's recent executive order on the Clean Power Plan, see http://conservamerica.org/conservamerica-statement-regarding-president-trumps-executive-order-climate-change/

A. The Regulatory Assistance Project (RAP) published excellent analysis of this issue in November 2015. A key finding in that analysis was "a relatively small reduction in customer usage can produce a much larger than average reduction in total emissions."[3]

While ConservAmerica is passionate about the need to reduce emissions, we don't blindly support every idea that could reduce emissions, because we live in the real world, where costs matter and people have limited resources.

So, demand and time-of-use rate design can't simply be about reducing emissions—they have to also be workable for the customer. And both demand and time-of-use rate design reduce customer costs.

As FERC has found, "Demand-side objectives, achieved through advanced metering, customer systems, and time-based rates, can provide several benefits:

- Deferred capital expenditures and improved capital asset utilization,
- Reduced electricity generation and environmental impacts, and
- Expanded options for customers to manage electricity consumption and costs… Results indicate significant peak demand reductions, as well as bill savings for customers."[4, 5]

You see there, it's two reductions that come from better rate design—reduced emissions <u>and</u> reduced costs. That is why a modernized rate design is in the public interest.

---

[3] http://www.raponline.org/wp-content/uploads/2016/05/lazarcolburn-ratedesigncppcompliancestrategy-2015-nov.pdf at Page 1

[4] https://www.ferc.gov/legal/staff-reports/2014/demand-response.pdf at Page 6

[5] http://midwestenergynews.com/2014/07/23/in-minnesota-behavior-programs-show-energy-saving-results/

Q. What are some of the reductions that come from reducing peak demand in an electric utility?

A. The first thing that comes to my mind is the reduction of ancillary services, because those reductions are going to be felt right away. Other reductions, like long-run reductions in transmission and generation resources are real, for sure, and sizable; but they come over time—and they will be more like avoided costs to customers anyway. People don't "feel" the costs that they don't ever pay—people don't feel them so they never *consciously realize* the benefit, and thus, it doesn't do anything to create a positive feedback loop, in which the reaction to the action fuels further action; which is a fancier way of saying "when is the last time you saw a rally celebrating something that didn't happen?"

But, back to ancillary services: Ancillary services are the resources that allow grid operators to balance supply and demand in real-time. Electrons have to go somewhere, so grid operators have to keep supply and demand in balance (it's even more complex than it sounds because of frequency issues, i.e., the oscillations in voltage in an alternating current system—way too complex for an MBA like me to explain).

Ancillary service reductions are going to show up in rates and in purchased fuel and power adjustor mechanisms very quickly. It's important to understand that there are three primary ways to provide ancillary services—and keep supply and demand in balance so the grid continues to function:

1) Spinning reserves,
2) Non-spinning reserves, and
3) Regulation.

There are a couple things the Commission needs to bear in mind with ancillary services—this is some of the most expensive power in the market. I have seen estimates that put its cost to utilities at 10 percent of total generation and transmission cost.[6]

Q. Which ancillary services affect rates and emissions the most?

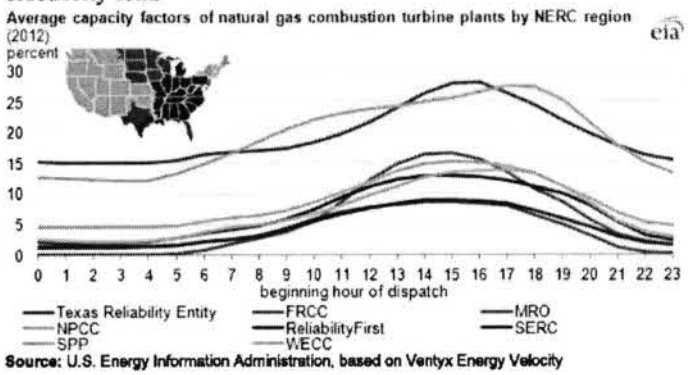
A. Spinning and non-spinning reserves. To remind the reader; spinning and non-spinning reserves are generation sources. These are "real" generation assets that put power onto the grid when needed—so they are coming onto the market when the market really needs them, and thus can command a high market price. Not to condescend, but it's vital to bear the economic facts in mind to understand the value of time-of-use and demand rates: When the grid runs into tight margins, the operators turn to ancillary services; so there are twin factors driving the price higher at that moment, the market is constrained, and the seller knows it.

But it's worse than that, because spinning and non-spinning reserves are generally in that role for a reason: If they could provide power at market-competitive rates more often, they would sell into the market more often. Non-spinning reserves are usually combustion turbines, and they don't run often:[7]

[6] http://www.iitk.ac.in/ime/anoops/IEX%20Training-2016/IITK%20-%20PPTs%20-%202016/Day%20-%202%20IITK/Prof.%20S.%20N.%20Singh%20-%204%20-%20Ancillary%20Services%20in%20Electricity%20Market.pdf

[7] https://www.eia.gov/todayinenergy/detail.php?id=13191

Natural gas-fired combustion turbines are generally used to meet peak electricity load



Q. What should we take from that graphic?

A. I think the key for this case is in the capacity factor for the WECC—which obviously includes Arizona—combustion turbines never hit a 15 percent capacity factor (i.e., they don't get used much), and they really see their biggest usage during the late afternoon and early evening (hours 15 through 18, i.e., 3:00 p.m. through 6:00 p.m.).

Q. By adopting demand rates, and expanding time of use rates, will Arizona see reductions in costs?

A. Yes, because RAP and FERC's studies are correct—effective pricing reduces costs. It's important to understand what pricing looks like at Arizona's Palo Verde hub. I am attaching a spreadsheet I compiled using EIA data on major U.S. trading hubs; the Palo Verde hub is Arizona's trading hub; and in the data for 2015 are instructive.

What I want to show the reader is a measure of the price difference seen at the Palo Verde hub. The EIA calculated the weighted average price in their model—what I have done is, I also calculated the delta between high and low prices. Then, through division, showed the percentage change on an intraday basis between high and low prices and the weighted average price for that day. It's showing us the movement of prices within the day at the Palo Verde hub.

Q. And what are the data showing us?

A. As one would expect, the winter months have much lower levels of price movement throughout the day. Arizona Public Service serves communities in all sorts of climates, but because the vast majority of load is in Maricopa County with its mild winter, prices are relatively stable –December's is 8.3 percent; January is 7.7 percent, and February is 5.0 percent.

Spring and Fall are even more calm: March is 5.9 percent, April is 6.8 percent, May is 5.7%. And in Fall, September is 4.8 percent, October is 5.6 percent, and November is 4.7 percent.

Summer is when prices really move, unsurprisingly. August sees intraday prices moving up and down 9.3 percent, July sees 9.1 percent, and June sees a 15.1 percent change within each day. Some days are relatively calm, but others see massive shifts.

Those price swings drive the market to respond with different approaches—some demand response, for sure; but also the utilization of higher-cost assets.

What time-of-use and demand rates will do is they will continue to provide downward pressure on demand, which will reduce intraday cost volatility by reducing peak demands; and will reduce emissions by requiring not only less power but less power from the least efficient resources. And these resources are not just the least efficient from a price perspective—they are also inefficient from an emissions perspective—for example, "peaker" combustion turbines are the most carbon intensive gas fired plants.

Q. So a modernized rate design using time-of-use and demand rates will reduce the long-run need for more generation and transmission?

A. That's precisely what will occur.

Q. Are those price changes "normal"?

A. Yes. There is substantial scope to reduce the volatility and cost of power at the Palo Verde Hub. A good comparison is to the PJM Western Hub. Attached is a spreadsheet I made to provide context—I pulled out the PJM Western Hub data for June of 2015 to allow the reader to compare Palo Verde Hub's June to PJM Western Hub's June.[8] PJM Western Hub saw price swings of 5.8 percent in June 2015, compared to Palo Verde Hub's 15.1 percent. PJM Western Hub was more active, with 45 trades compared to Palo Verde's 33; but Palo Verde was conducting more trades per megawatt-hour. So, I think it's a pretty good comparison.

Q. But how is the settlement rate design fair to customers?

A. Customers will benefit from the reduced costs and reduced emissions described above. But also, the settlement takes appropriate steps to reduce the "cost shift" that results from rooftop solar customers not paying their costs of service, due to a volumetric based rate design. Because solar customers are disproportionately wealthier, this results in poor and moderate income Arizonans subsidizing more affluent solar users. The settlement rate design, by promoting time-of-use and demand rates, begins to address this problem. Importantly, rooftop solar customers will be limited to time-of-use or demand options, and will not be able to revert to the traditional volumetric rate.[9]

---

[8] The full EIA dataset is available upon request as a workpaper.

[9] Settlement Agreement, Section 18.1.

The Commission should approve the settlement as is, particularly the changes in rate design.

IV. <u>The AZ Sun II program will provide a rooftop solar option to low and moderate income Arizonans</u>.

Q. Please describe the AZ Sun II program.

A. The AZ Sun Program is designed to "expand access to rooftop solar for low and moderate income Arizonans."[10] It is a rooftop solar program specifically targeted at low and moderate income APS customers. It is a utility provided program, and all the rooftop solar systems will be owned and operated by APS. The systems will be installed by third party installers, such as the local installers in the Arizona Solar Deployment Alliance ("ASDA").

Q. How is the program targeted at low and moderate income APS customers?

A. Under Section 28.4 of the Settlement, the AZ Sun II Program is "limited to low and moderate income residential APS customers…., as well as non-profits that serve low or moderate income APS residential customers, Title I schools, and rural government customers." For the purposes of the program, "low income" means 200% of the federal poverty level, and "moderate income" means less than 100% of the median Arizona household income. Further, under Section 28.2(d), 65% of the program funds will be dedicated to low income customers.

Q. How is the program funded?

A. It is funded by APS. APS will be eligible to recover the reasonable and prudent costs of the program through the Renewable Energy Adjustment Clause until the next rate case

[10] Settlement Agreement, Section 28.1

(Section 28.2), and in the next rate case, APS may request to include the rooftop solar systems into rate base (Section 28.2(b)). The program size is between $10 million and $15 million per year.

Q. Why is this AZ Sun II Program in the public interest?

A. As I explained in my first two rounds of testimony, ConservAmerica is troubled by the fact that 95 percent of rooftop solar installations in the U.S. have been on the rooftops of the wealthiest 60 percent of Americans.

But I looked into Arizona more closely – and in particular, into Arizona Public Service Company's situation with solar deployments.

Q. What did you look at and what have you found?

A. We asked for low income assistance levels for APS-served zip codes. We looked at highest income and lowest income zip codes; and we asked for number of customers in each of those zip codes who signed up for low-income bill assistance. Then we looked at the www.ArizonaGoesSolar.org website and pulled up the number of solar installations in those zip codes.

Q. What are your findings?

A. Well, they're fairly brutal for anyone who is concerned about social equity. The spreadsheet is attached, but here's the bottom line information:

Richest Neighborhoods, Solar Penetration	2.99%
Poorest Neighborhoods, Solar Penetration	0.82%
Ratio of Solar, Rich vs. Poor	3.65x
Richest Neighborhoods, Low Income Assistance	1.38%
Poorest Neighborhoods, Low Income Assistance	17%
Ratio of Low Income Assistance, Poor vs. Rich	12.32x
Average Income, Richest Neighborhoods	$93,887
Average Income, Poorest Neighborhoods	$16,220
Income Differential Ratio, Rich vs. Poor	5.79x

Q. How does ConservAmerica describe that data?

A. This is what that data means. It means in the poorest zip codes in APS' service area, you are more than 12 times more likely to be on bill assistance than your rich co-customers. Your rich co-customers make nearly six times more money than you, and they are nearly four times more likely to get solar on their rooftop so they can pay less for electricity than you.

But, you still get to pay taxes to provide that solar to those co-customers who are tremendously more wealthy than you—and for the 83 percent in the low income zip codes who haven't signed up for bill assistance, they still get to pay the surcharges every month to put more solar into those rich neighborhoods. But you don't get it in your community.

Q. Is there any more data that the Commission needs, other than that, to justify adopting the AZ Sun II program?

A. No, there isn't. We have allowed a grave social injustice to be perpetrated on the poor in Arizona. And it's time for this Commission, for these five Commissioners whom I personally know and respect, to fix that moral wrong. I am certain that they will.

Q. Does this conclude your testimony?

A. It does.

EXHIBIT 1

PALO VERDE PEAK PRICING 2015

	Trade date	Delivery start date	Delivery end date	High Price $/MWh	Low Price $/MWh	Wtd Avg Price $/MWh	Delta Between High/Low Price	Delta Between High/Wtd Avg Price	Wtd Avg Price, Change from Prior Day	Daily volume MWh	Number of trades	Number of counter-parties
Palo Verde	1/2/2015	01/03/15	01/05/15	28.50	26.50	27.43	$ 2.00	$ 1.07	$ (3.46)	8,800	11	8
Palo Verde	1/5/2015	01/06/15	01/06/15	33.25	31.25	32.23	$ 2.00	$ 1.02	$ 4.80	11,200	28	15
Palo Verde	1/6/2015	01/07/15	01/07/15	30.00	27.50	28.58	$ 2.50	$ 1.42	$ (3.65)	13,600	31	15
Palo Verde	1/7/2015	01/08/15	01/08/15	27.75	26.25	26.79	$ 1.50	$ 0.96	$ (1.79)	19,200	46	18
Palo Verde	1/8/2015	01/09/15	01/10/15	25.50	24.50	24.92	$ 1.00	$ 0.58	$ (1.87)	14,400	18	9
Palo Verde	1/9/2015	01/12/15	01/12/15	28.00	26.25	27.06	$ 1.75	$ 0.94	$ 2.14	1,600	4	6
Palo Verde	1/12/2015	01/13/15	01/13/15	25.75	24.25	25.08	$ 1.50	$ 0.67	$ (1.98)	6,000	15	11
Palo Verde	1/13/2015	01/14/15	01/14/15	29.50	24.50	25.90	$ 5.00	$ 3.60	$ 0.82	10,400	25	16
Palo Verde	1/14/2015	01/15/15	01/16/15	27.00	25.50	26.55	$ 1.50	$ 0.45	$ 0.65	11,200	13	11
Palo Verde	1/15/2015	01/17/15	01/17/15	26.00	25.00	25.68	$ 1.00	$ 0.32	$ (0.87)	4,000	10	9
Palo Verde	1/16/2015	01/19/15	01/20/15	26.50	23.50	25.35	$ 3.00	$ 1.15	$ (0.33)	12,000	15	11
Palo Verde	1/20/2015	01/21/15	01/21/15	26.25	23.50	24.48	$ 2.75	$ 1.77	$ (0.87)	4,800	12	9
Palo Verde	1/21/2015	01/22/15	01/22/15	25.25	23.25	24.11	$ 2.00	$ 1.14	$ (0.37)	9,600	24	12
Palo Verde	1/22/2015	01/23/15	01/24/15	24.00	23.00	23.16	$ 1.00	$ 0.84	$ (0.95)	19,200	24	14
Palo Verde	1/23/2015	01/26/15	01/26/15	24.50	24.00	24.25	$ 0.50	$ 0.25	$ 1.09	2,800	7	9
Palo Verde	1/26/2015	01/27/15	01/27/15	26.00	22.00	23.31	$ 4.00	$ 2.69	$ (0.94)	4,400	11	7
Palo Verde	1/27/2015	01/28/15	01/28/15	24.00	23.00	23.43	$ 1.00	$ 0.57	$ 0.12	4,400	11	12
Palo Verde	1/28/2015	01/29/15	01/29/15	27.00	24.00	25.25	$ 3.00	$ 1.75	$ 1.82	5,200	13	11
Palo Verde	1/29/2015	01/30/15	01/31/15	25.00	23.75	24.28	$ 1.25	$ 0.72	$ (0.97)	7,200	9	8
Palo Verde	1/30/2015	02/02/15	02/02/15	25.00	23.75	24.73	$ 1.25	$ 0.27	$ 0.45	11,600	26	14
AVERAGE JANUARY PRICES/SPREADS				**$ 26.74**	**$ 24.76**	**$ 25.63**	**$ 1.98**	**$ 1.11**	**$ (0.31)**	**9,080**	**18**	**11**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**7.7%**						
Palo Verde	2/2/2015	02/03/15	02/03/15	25.00	23.75	24.36	$ 1.25	$ 0.64	$ (0.37)	16,000	38	15
Palo Verde	2/3/2015	02/04/15	02/04/15	24.50	23.25	24.26	$ 1.25	$ 0.24	$ (0.10)	18,000	41	17
Palo Verde	2/4/2015	02/05/15	02/05/15	24.25	22.50	23.83	$ 1.75	$ 0.42	$ (0.43)	11,200	27	16
Palo Verde	2/5/2015	02/06/15	02/07/15	22.75	21.00	21.73	$ 1.75	$ 1.02	$ (2.10)	30,400	36	15
Palo Verde	2/6/2015	02/09/15	02/09/15	22.50	22.00	22.12	$ 0.50	$ 0.38	$ 0.39	11,600	26	12
Palo Verde	2/9/2015	02/10/15	02/10/15	23.00	22.25	22.64	$ 0.75	$ 0.36	$ 0.52	16,000	38	14
Palo Verde	2/10/2015	02/11/15	02/11/15	23.50	23.00	23.26	$ 0.50	$ 0.24	$ 0.62	13,600	32	13

Palo Verde	2/11/2015	02/12/15	02/13/15	25.50	24.50	25.02	$ 1.00	$ 0.48	$ 1.76	9,600	12	12
Palo Verde	2/12/2015	02/14/15	02/14/15	22.25	21.50	21.85	$ 0.75	$ 0.40	$ (3.17)	7,200	18	10
Palo Verde	2/13/2015	02/16/15	02/17/15	23.50	22.50	23.04	$ 1.00	$ 0.46	$ 1.19	25,600	32	15
Palo Verde	2/17/2015	02/18/15	02/18/15	23.75	23.00	23.30	$ 0.75	$ 0.45	$ 0.26	9,200	22	13
Palo Verde	2/18/2015	02/19/15	02/19/15	24.00	23.00	23.33	$ 1.00	$ 0.67	$ 0.03	9,200	23	13
Palo Verde	2/19/2015	02/20/15	02/21/15	24.00	23.00	23.47	$ 1.00	$ 0.53	$ 0.14	20,000	25	13
Palo Verde	2/20/2015	02/23/15	02/23/15	27.25	25.50	26.08	$ 1.75	$ 1.17	$ 2.61	15,200	38	16
Palo Verde	2/23/2015	02/24/15	02/24/15	28.50	27.50	28.00	$ 1.00	$ 0.50	$ 1.92	12,000	30	16
Palo Verde	2/24/2015	02/25/15	02/25/15	28.50	26.75	27.71	$ 1.75	$ 0.79	$ (0.29)	15,200	38	14
Palo Verde	2/25/2015	02/26/15	02/26/15	27.75	26.50	27.34	$ 1.25	$ 0.41	$ (0.37)	14,800	37	16
Palo Verde	2/26/2015	02/27/15	02/28/15	26.00	23.05	25.41	$ 2.95	$ 0.59	$ (1.93)	19,200	24	13
Palo Verde	2/27/2015	03/02/15	03/02/15	25.75	24.75	25.22	$ 1.00	$ 0.53	$ (0.19)	14,800	32	15
AVERAGE FEBRUARY PRICES/SPREADS				**$ 24.86**	**$ 23.65**	**$ 24.31**	**$ 1.21**	**$ 0.54**	**$ 0.03**	**15,200**	**30**	**14**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**5.0%**						
Palo Verde	3/2/2015	03/03/15	03/03/15	28.00	25.25	25.80	$ 2.75	$ 2.20	$ 0.58	12,800	31	14
Palo Verde	3/3/2015	03/04/15	03/04/15	28.50	26.25	27.41	$ 2.25	$ 1.09	$ 1.61	18,400	42	14
Palo Verde	3/4/2015	03/05/15	03/05/15	29.50	26.00	29.07	$ 3.50	$ 0.43	$ 1.66	9,200	23	12
Palo Verde	3/5/2015	03/06/15	03/07/15	27.00	26.25	26.68	$ 0.75	$ 0.32	$ (2.39)	18,400	23	16
Palo Verde	3/6/2015	03/09/15	03/09/15	26.00	25.00	25.68	$ 1.00	$ 0.32	$ (1.00)	14,800	27	13
Palo Verde	3/9/2015	03/10/15	03/10/15	26.00	25.00	25.55	$ 1.00	$ 0.45	$ (0.13)	14,000	30	15
Palo Verde	3/10/2015	03/11/15	03/11/15	25.25	24.25	24.68	$ 1.00	$ 0.57	$ (0.87)	15,600	37	17
Palo Verde	3/11/2015	03/12/15	03/12/15	25.50	23.75	24.28	$ 1.75	$ 1.22	$ (0.40)	15,200	38	14
Palo Verde	3/12/2015	03/13/15	03/14/15	23.75	22.75	23.10	$ 1.00	$ 0.65	$ (1.18)	26,400	33	14
Palo Verde	3/13/2015	03/16/15	03/16/15	25.50	24.25	24.51	$ 1.25	$ 0.99	$ 1.41	14,800	37	16
Palo Verde	3/16/2015	03/17/15	03/17/15	26.00	25.00	25.35	$ 1.00	$ 0.65	$ 0.84	16,800	41	18
Palo Verde	3/17/2015	03/18/15	03/18/15	26.50	24.75	25.17	$ 1.75	$ 1.33	$ (0.18)	13,200	33	14
Palo Verde	3/18/2015	03/19/15	03/19/15	25.00	24.25	24.69	$ 0.75	$ 0.31	$ (0.48)	10,800	27	13
Palo Verde	3/19/2015	03/20/15	03/21/15	23.75	22.00	23.28	$ 1.75	$ 0.47	$ (1.41)	21,600	24	13
Palo Verde	3/20/2015	03/23/15	03/23/15	25.00	23.25	24.45	$ 1.75	$ 0.55	$ 1.17	14,000	29	14
Palo Verde	3/23/2015	03/24/15	03/24/15	23.75	23.00	23.67	$ 0.75	$ 0.08	$ (0.78)	9,600	23	15
Palo Verde	3/24/2015	03/25/15	03/25/15	23.75	23.00	23.63	$ 0.75	$ 0.12	$ (0.04)	13,600	30	15
Palo Verde	3/25/2015	03/26/15	03/26/15	26.50	25.50	26.28	$ 1.00	$ 0.22	$ 2.65	7,600	18	13
Palo Verde	3/26/2015	03/27/15	03/28/15	24.50	24.00	24.38	$ 0.50	$ 0.12	$ (1.90)	13,600	14	11

Palo Verde	3/27/2015	03/30/15	03/30/15	28.00	25.00	25.90	$ 3.00	$ 2.10	$ 1.52	9,600	22	10
Palo Verde	3/30/2015	03/31/15	03/31/15	28.50	25.00	25.70	$ 3.50	$ 2.80	$ (0.20)	8,800	21	11
Palo Verde	3/31/2015	04/01/15	04/02/15	25.00	25.00	25.00	$ -	$ -	$ (0.70)	8,800	11	6
AVERAGE MARCH PRICES/SPREADS				**$ 25.97**	**$ 24.48**	**$ 25.19**	**$ 1.49**	**$ 0.77**	**$ (0.01)**	**#####**	**28**	**14**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**5.9%**						
Palo Verde	4/1/2015	04/03/15	04/04/15	25.00	24.25	24.83	$ 0.75	$ 0.17	$ (0.17)	18,400	19	9
Palo Verde	4/2/2015	04/06/15	04/06/15	24.25	23.00	23.47	$ 1.25	$ 0.78	$ (1.36)	6,800	17	13
Palo Verde	4/6/2015	04/07/15	04/07/15	24.00	21.50	22.78	$ 2.50	$ 1.22	$ (0.69)	9,600	22	12
Palo Verde	4/7/2015	04/08/15	04/08/15	23.50	22.00	22.83	$ 1.50	$ 0.67	$ 0.05	6,400	16	14
Palo Verde	4/8/2015	04/09/15	04/09/15	23.00	21.75	22.18	$ 1.25	$ 0.82	$ (0.65)	8,000	18	13
Palo Verde	4/9/2015	04/10/15	04/11/15	25.00	23.25	23.90	$ 1.75	$ 1.10	$ 1.72	16,000	20	8
Palo Verde	4/10/2015	04/13/15	04/13/15	24.00	23.25	23.55	$ 0.75	$ 0.45	$ (0.35)	10,000	24	11
Palo Verde	4/13/2015	04/14/15	04/14/15	23.25	20.00	22.76	$ 3.25	$ 0.49	$ (0.79)	7,200	18	13
Palo Verde	4/14/2015	04/15/15	04/15/15	24.00	20.00	22.67	$ 4.00	$ 1.33	$ (0.09)	5,200	13	12
Palo Verde	4/15/2015	04/16/15	04/16/15	24.75	23.00	23.77	$ 1.75	$ 0.98	$ 1.10	10,000	25	15
Palo Verde	4/16/2015	04/17/15	04/18/15	24.00	23.50	23.84	$ 0.50	$ 0.16	$ 0.07	20,800	26	14
Palo Verde	4/17/2015	04/20/15	04/20/15	24.25	23.75	23.98	$ 0.50	$ 0.27	$ 0.14	12,000	30	13
Palo Verde	4/20/2015	04/21/15	04/21/15	24.00	23.25	23.46	$ 0.75	$ 0.54	$ (0.52)	6,800	17	11
Palo Verde	4/21/2015	04/22/15	04/22/15	24.00	23.00	23.71	$ 1.00	$ 0.29	$ 0.25	4,800	11	10
Palo Verde	4/22/2015	04/23/15	04/23/15	24.75	23.50	24.04	$ 1.25	$ 0.71	$ 0.33	10,400	22	11
Palo Verde	4/23/2015	04/24/15	04/25/15	24.00	21.75	23.23	$ 2.25	$ 0.77	$ (0.81)	16,800	21	11
Palo Verde	4/24/2015	04/27/15	04/27/15	27.00	26.00	26.40	$ 1.00	$ 0.60	$ 3.17	13,600	28	18
Palo Verde	4/27/2015	04/28/15	04/28/15	25.50	24.75	25.18	$ 0.75	$ 0.32	$ (1.22)	19,200	46	15
Palo Verde	4/28/2015	04/29/15	04/29/15	24.75	23.75	24.25	$ 1.00	$ 0.50	$ (0.93)	10,800	24	9
Palo Verde	4/28/2015	04/29/15	04/29/15	24.75	23.75	24.25	$ 1.00	$ 0.50	$ (0.93)	10,800	24	9
Palo Verde	4/29/2015	04/30/15	04/30/15	30.50	27.00	28.67	$ 3.50	$ 1.83	$ 4.42	6,400	16	13
Palo Verde	4/30/2015	05/01/15	05/02/15	28.00	24.50	25.15	$ 3.50	$ 2.85	$ (3.52)	13,600	17	10
AVERAGE APRIL PRICES/SPREADS				**$ 24.83**	**$ 23.20**	**$ 24.04**	**$ 1.63**	**$ 0.79**	**$ (0.04)**	**#####**	**22**	**12**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**6.8%**						
Palo Verde	5/1/2015	05/04/15	05/04/15	25.75	24.50	25.28	$ 1.25	$ 0.47	$ 0.13	6,800	17	13
Palo Verde	5/4/2015	05/05/15	05/05/15	25.50	23.00	24.20	$ 2.50	$ 1.30	$ (1.08)	12,000	30	14
Palo Verde	5/5/2015	05/06/15	05/06/15	25.00	23.50	24.13	$ 1.50	$ 0.87	$ (0.07)	13,600	32	12

Palo Verde	5/6/2015	05/07/15	05/07/15	26.25	24.00	25.21	$	2.25	$	1.04	$	1.08	15,600	37	15
Palo Verde	5/7/2015	05/08/15	05/09/15	24.00	23.00	23.72	$	1.00	$	0.28	$	(1.49)	15,200	19	11
Palo Verde	5/8/2015	05/11/15	05/11/15	27.00	24.50	24.76	$	2.50	$	2.24	$	1.04	11,200	25	11
Palo Verde	5/11/2015	05/12/15	05/12/15	24.75	24.00	24.36	$	0.75	$	0.39	$	(0.40)	11,600	24	13
Palo Verde	5/12/2015	05/13/15	05/13/15	24.75	23.25	23.88	$	1.50	$	0.87	$	(0.48)	8,800	22	13
Palo Verde	5/13/2015	05/14/15	05/14/15	24.50	23.75	24.14	$	0.75	$	0.36	$	0.26	9,600	21	12
Palo Verde	5/14/2015	05/15/15	05/16/15	22.50	19.00	21.18	$	3.50	$	1.32	$	(2.96)	27,200	27	12
Palo Verde	5/15/2015	05/18/15	05/18/15	24.75	24.00	24.53	$	0.75	$	0.22	$	3.35	7,200	18	7
Palo Verde	5/18/2015	05/19/15	05/19/15	23.25	23.00	23.10	$	0.25	$	0.15	$	(1.43)	11,600	20	12
Palo Verde	5/19/2015	05/20/15	05/20/15	24.50	23.50	23.75	$	1.00	$	0.75	$	0.65	3,200	8	7
Palo Verde	5/20/2015	05/21/15	05/22/15	24.25	23.00	23.45	$	1.25	$	0.80	$	(0.30)	11,200	14	8
Palo Verde	5/21/2015	05/23/15	05/23/15	23.00	20.00	20.67	$	3.00	$	2.33	$	(2.78)	4,800	12	10
Palo Verde	5/22/2015	05/26/15	05/26/15	24.00	23.50	23.88	$	0.50	$	0.12	$	3.21	1,600	4	5
Palo Verde	5/26/2015	05/27/15	05/27/15	24.00	23.75	23.97	$	0.25	$	0.03	$	0.09	3,200	8	6
Palo Verde	5/27/2015	05/28/15	05/29/15	27.00	25.25	25.86	$	1.75	$	1.14	$	1.89	19,200	23	15
Palo Verde	5/28/2015	05/30/15	05/30/15	26.75	26.00	26.44	$	0.75	$	0.31	$	0.58	9,600	24	14
Palo Verde	5/29/2015	06/01/15	06/01/15	26.25	25.75	25.90	$	0.50	$	0.35	$	(0.54)	8,800	21	12
AVERAGE MAY PRICES/SPREADS				**$ 24.89**	**$ 23.51**	**$ 24.12**	**$**	**1.38**	**$**	**0.77**	**$**	**0.04**	**#####**	**20**	**11**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**5.7%**									
Palo Verde	6/1/2015	06/02/15	06/02/15	24.50	24.00	24.15	$	0.50	$	0.35	$	(1.75)	7,200	18	11
Palo Verde	6/2/2015	06/03/15	06/03/15	24.25	23.25	23.88	$	1.00	$	0.37	$	(0.27)	10,800	23	13
Palo Verde	6/3/2015	06/04/15	06/04/15	24.00	23.25	23.74	$	0.75	$	0.26	$	(0.14)	9,200	23	12
Palo Verde	6/4/2015	06/05/15	06/06/15	23.25	22.25	22.83	$	1.00	$	0.42	$	(0.91)	20,800	22	11
Palo Verde	6/5/2015	06/08/15	06/08/15	26.50	25.50	25.95	$	1.00	$	0.55	$	3.12	16,400	39	17
Palo Verde	6/8/2015	06/09/15	06/09/15	28.50	26.50	27.04	$	2.00	$	1.46	$	1.09	18,000	42	18
Palo Verde	6/9/2015	06/10/15	06/10/15	28.00	26.50	26.87	$	1.50	$	1.13	$	(0.17)	23,600	49	18
Palo Verde	6/10/2015	06/11/15	06/11/15	28.00	24.75	26.05	$	3.25	$	1.95	$	(0.82)	13,200	30	15
Palo Verde	6/11/2015	06/12/15	06/13/15	28.50	26.75	27.99	$	1.75	$	0.51	$	1.94	30,400	35	16
Palo Verde	6/12/2015	06/15/15	06/15/15	35.00	29.25	30.96	$	5.75	$	4.04	$	2.97	10,400	26	16
Palo Verde	6/15/2015	06/16/15	06/16/15	38.00	33.25	34.47	$	4.75	$	3.53	$	3.51	12,800	23	15
Palo Verde	6/16/2015	06/17/15	06/17/15	39.00	34.75	37.49	$	4.25	$	1.51	$	3.02	6,800	17	13
Palo Verde	6/17/2015	06/18/15	06/18/15	44.00	38.00	42.68	$	6.00	$	1.32	$	5.19	8,000	19	13
Palo Verde	6/18/2015	06/19/15	06/20/15	38.00	36.75	37.39	$	1.25	$	0.61	$	(5.29)	14,400	18	14

Palo Verde	6/19/2015	06/22/15	06/22/15	38.00	32.00	36.83	$ 6.00	$ 1.17	$ (0.56)	14,400	34	17
Palo Verde	6/22/2015	06/23/15	06/23/15	36.00	34.00	35.11	$ 2.00	$ 0.89	$ (1.72)	10,400	26	14
Palo Verde	6/23/2015	06/24/15	06/24/15	38.00	36.00	36.92	$ 2.00	$ 1.08	$ 1.81	14,400	36	17
Palo Verde	6/24/2015	06/25/15	06/25/15	38.25	36.50	36.94	$ 1.75	$ 1.31	$ 0.02	15,600	38	19
Palo Verde	6/25/2015	06/26/15	06/27/15	41.00	36.00	37.35	$ 5.00	$ 3.65	$ 0.41	46,400	57	21
Palo Verde	6/26/2015	06/29/15	06/29/15	38.50	35.00	36.78	$ 3.50	$ 1.72	$ (0.57)	21,600	52	21
Palo Verde	6/29/2015	06/30/15	06/30/15	51.50	39.75	41.73	$ 11.75	$ 9.77	$ 4.95	18,000	42	20
Palo Verde	6/30/2015	07/01/15	07/01/15	90.00	46.00	60.77	$ 44.00	$ 29.23	$ 19.04	28,400	66	18
AVERAGE JUNE PRICES/SPREADS				**$ 36.40**	**$ 31.36**	**$ 33.36**	**$ 5.03**	**$ 3.04**	**$ 1.59**	**#####**	**33**	**16**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**15.1%**						
Palo Verde	7/1/2015	07/02/15	07/03/15	65.00	50.00	59.57	$ 15.00	$ 5.43	$ (1.20)	36,800	46	18
Palo Verde	7/2/2015	07/06/15	07/06/15	40.50	36.25	36.99	$ 4.25	$ 3.51	$ (22.58)	10,800	27	11
Palo Verde	7/6/2015	07/07/15	07/07/15	34.50	31.25	32.59	$ 3.25	$ 1.91	$ (4.40)	18,400	46	17
Palo Verde	7/7/2015	07/08/15	07/08/15	30.50	29.75	30.07	$ 0.75	$ 0.43	$ (2.52)	16,800	42	17
Palo Verde	7/8/2015	07/09/15	07/09/15	27.50	26.50	27.02	$ 1.00	$ 0.48	$ (3.05)	12,400	25	13
Palo Verde	7/9/2015	07/10/15	07/11/15	25.50	24.50	24.84	$ 1.00	$ 0.66	$ (2.18)	27,200	30	16
Palo Verde	7/10/2015	07/13/15	07/13/15	29.75	27.50	28.28	$ 2.25	$ 1.47	$ 3.44	7,200	18	14
Palo Verde	7/13/2015	07/14/15	07/14/15	30.00	27.25	29.03	$ 2.75	$ 0.97	$ 0.75	11,200	26	14
Palo Verde	7/14/2015	07/15/15	07/15/15	32.50	29.25	31.09	$ 3.25	$ 1.41	$ 2.06	12,400	31	16
Palo Verde	7/15/2015	07/16/15	07/16/15	32.75	31.50	32.17	$ 1.25	$ 0.58	$ 1.08	14,000	35	17
Palo Verde	7/16/2015	07/17/15	07/18/15	31.00	28.75	30.09	$ 2.25	$ 0.91	$ (2.08)	27,200	34	18
Palo Verde	7/17/2015	07/20/15	07/20/15	31.50	30.50	30.77	$ 1.00	$ 0.73	$ 0.68	8,800	19	13
Palo Verde	7/20/2015	07/21/15	07/21/15	31.00	29.25	29.50	$ 1.75	$ 1.50	$ (1.27)	8,800	22	14
Palo Verde	7/21/2015	07/22/15	07/22/15	31.00	28.00	28.78	$ 3.00	$ 2.22	$ (0.72)	12,800	30	21
Palo Verde	7/22/2015	07/23/15	07/23/15	29.00	27.25	27.88	$ 1.75	$ 1.12	$ (0.90)	14,000	34	18
Palo Verde	7/23/2015	07/24/15	07/25/15	29.00	26.75	27.68	$ 2.25	$ 1.32	$ (0.20)	13,600	17	13
Palo Verde	7/24/2015	07/27/15	07/27/15	32.50	30.00	31.49	$ 2.50	$ 1.01	$ 3.81	12,800	31	18
Palo Verde	7/27/2015	07/28/15	07/28/15	34.50	32.75	33.47	$ 1.75	$ 1.03	$ 1.98	19,600	47	16
Palo Verde	7/28/2015	07/29/15	07/29/15	37.50	36.00	36.87	$ 1.50	$ 0.63	$ 3.40	18,000	43	20
Palo Verde	7/29/2015	07/30/15	07/31/15	42.00	34.75	36.68	$ 7.25	$ 5.32	$ (0.19)	32,800	40	16
Palo Verde	7/30/2015	08/01/15	08/01/15	31.75	30.00	30.55	$ 1.75	$ 1.20	$ (6.13)	26,000	60	24
Palo Verde	7/31/2015	08/03/15	08/03/15	36.00	33.00	34.76	$ 3.00	$ 1.24	$ 4.21	11,200	27	16
AVERAGE JULY PRICES/SPREADS				**$ 33.88**	**$ 30.94**	**$ 32.28**	**$ 2.93**	**$ 1.59**	**$ (1.18)**	**#####**	**33**	**16**

HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**9.1%**								
Palo Verde	8/3/2015	08/04/15	08/04/15	47.00	34.00	39.00	$ 13.00	$ 8.00	$ 4.24	13,200	32	20		
Palo Verde	8/4/2015	08/05/15	08/05/15	44.00	39.50	41.08	$ 4.50	$ 2.92	$ 2.08	17,600	43	18		
Palo Verde	8/5/2015	08/06/15	08/06/15	40.50	37.75	39.18	$ 2.75	$ 1.32	$ (1.90)	17,200	43	18		
Palo Verde	8/6/2015	08/07/15	08/08/15	35.00	33.00	34.04	$ 2.00	$ 0.96	$ (5.14)	25,600	32	15		
Palo Verde	8/7/2015	08/10/15	08/10/15	33.50	30.50	32.87	$ 3.00	$ 0.63	$ (1.17)	10,400	25	16		
Palo Verde	8/10/2015	08/11/15	08/11/15	36.50	34.75	35.35	$ 1.75	$ 1.15	$ 2.48	13,600	34	16		
Palo Verde	8/11/2015	08/12/15	08/12/15	39.00	37.50	38.53	$ 1.50	$ 0.47	$ 3.18	14,800	34	12		
Palo Verde	8/12/2015	08/13/15	08/13/15	41.00	38.50	39.60	$ 2.50	$ 1.40	$ 1.07	14,400	33	16		
Palo Verde	8/13/2015	08/14/15	08/15/15	43.00	36.00	38.66	$ 7.00	$ 4.34	$ (0.94)	30,400	32	17		
Palo Verde	8/14/2015	08/17/15	08/17/15	41.50	37.50	39.26	$ 4.00	$ 2.24	$ 0.60	14,400	30	17		
Palo Verde	8/17/2015	08/18/15	08/18/15	39.50	38.00	39.02	$ 1.50	$ 0.48	$ (0.24)	15,200	36	18		
Palo Verde	8/18/2015	08/19/15	08/19/15	37.00	35.50	36.05	$ 1.50	$ 0.95	$ (2.97)	10,000	19	15		
Palo Verde	8/19/2015	08/20/15	08/20/15	35.00	31.25	32.66	$ 3.75	$ 2.34	$ (3.39)	8,000	19	14		
Palo Verde	8/20/2015	08/21/15	08/22/15	29.00	25.25	27.55	$ 3.75	$ 1.45	$ (5.11)	28,000	29	15		
Palo Verde	8/21/2015	08/24/15	08/24/15	35.00	30.25	31.35	$ 4.75	$ 3.65	$ 3.80	10,000	23	15		
Palo Verde	8/24/2015	08/25/15	08/25/15	32.50	31.50	31.99	$ 1.00	$ 0.51	$ 0.64	8,800	22	13		
Palo Verde	8/25/2015	08/26/15	08/26/15	33.00	32.25	32.90	$ 0.75	$ 0.10	$ 0.91	10,800	27	13		
Palo Verde	8/26/2015	08/27/15	08/27/15	36.75	35.00	35.84	$ 1.75	$ 0.91	$ 2.94	23,200	50	17		
Palo Verde	8/27/2015	08/28/15	08/29/15	34.75	32.25	32.71	$ 2.50	$ 2.04	$ (3.13)	25,600	25	14		
Palo Verde	8/28/2015	08/31/15	08/31/15	35.25	32.50	33.61	$ 2.75	$ 1.64	$ 0.90	14,800	29	19		
Palo Verde	8/31/2015	09/01/15	09/01/15	30.50	27.75	28.98	$ 2.75	$ 1.52	$ (4.63)	12,000	27	16		
AVERAGE AUGUST PRICES/SPREADS				**$ 37.11**	**$ 33.83**	**$ 35.25**	**$ 3.27**	**$ 1.86**	**$ (0.28)**	**#####**	**31**	**16**		
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**9.3%**								
Palo Verde	9/1/2015	09/02/15	09/02/15	27.00	25.50	26.25	$ 1.50	$ 0.75	$ (2.73)	10,800	24	17		
Palo Verde	9/2/2015	09/03/15	09/04/15	27.00	26.25	26.65	$ 0.75	$ 0.35	$ 0.40	16,800	21	14		
Palo Verde	9/3/2015	09/05/15	09/05/15	26.00	25.00	25.59	$ 1.00	$ 0.41	$ (1.06)	5,600	13	14		
Palo Verde	9/4/2015	09/08/15	09/08/15	30.25	28.50	29.33	$ 1.75	$ 0.92	$ 3.74	10,800	27	20		
Palo Verde	9/8/2015	09/09/15	09/09/15	40.50	35.00	38.58	$ 5.50	$ 1.92	$ 9.25	19,600	48	20		
Palo Verde	9/9/2015	09/10/15	09/10/15	40.00	38.25	39.15	$ 1.75	$ 0.85	$ 0.57	16,400	39	19		
Palo Verde	9/10/2015	09/11/15	09/12/15	34.50	33.00	33.43	$ 1.50	$ 1.07	$ (5.72)	32,800	36	21		
Palo Verde	9/11/2015	09/14/15	09/14/15	30.25	28.00	28.87	$ 2.25	$ 1.38	$ (4.56)	23,600	53	20		

Palo Verde	9/14/2015	09/15/15	09/15/15	26.75	25.75	26.07	$ 1.00	$ 0.68	$ (2.80)	16,800	41	16
Palo Verde	9/15/2015	09/16/15	09/16/15	27.75	26.50	27.37	$ 1.25	$ 0.38	$ 1.30	15,600	36	16
Palo Verde	9/16/2015	09/17/15	09/17/15	27.25	26.25	26.56	$ 1.00	$ 0.69	$ (0.81)	17,200	43	16
Palo Verde	9/17/2015	09/18/15	09/19/15	28.00	27.00	27.55	$ 1.00	$ 0.45	$ 0.99	30,400	36	17
Palo Verde	9/18/2015	09/21/15	09/21/15	32.25	30.50	31.98	$ 1.75	$ 0.27	$ 4.43	9,600	20	13
Palo Verde	9/21/2015	09/22/15	09/22/15	27.75	27.25	27.53	$ 0.50	$ 0.22	$ (4.45)	9,600	18	16
Palo Verde	9/22/2015	09/23/15	09/23/15	27.75	27.25	27.70	$ 0.50	$ 0.05	$ 0.17	14,400	33	21
Palo Verde	9/23/2015	09/24/15	09/24/15	32.25	32.00	32.10	$ 0.25	$ 0.15	$ 4.40	8,800	21	14
Palo Verde	9/24/2015	09/25/15	09/26/15	31.75	30.50	31.06	$ 1.25	$ 0.69	$ (1.04)	21,600	27	19
Palo Verde	9/25/2015	09/28/15	09/28/15	31.75	29.25	29.65	$ 2.50	$ 2.10	$ (1.41)	9,600	22	13
Palo Verde	9/28/2015	09/29/15	09/29/15	30.50	29.50	29.95	$ 1.00	$ 0.55	$ 0.30	11,600	29	15
Palo Verde	9/29/2015	09/30/15	09/30/15	30.25	29.50	29.91	$ 0.75	$ 0.34	$ (0.04)	11,600	28	14
AVERAGE SEPTEMBER PRICES/SPREADS				**$ 30.48**	**$ 29.04**	**$ 29.76**	**$ 1.44**	**$ 0.71**	**$ 0.05**	**#####**	**31**	**17**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**4.8%**						
Palo Verde	9/30/2015	10/01/15	10/01/15	30.50	27.50	28.13	$ 3.00	$ 2.37	$ (1.78)	20,000	49	18
Palo Verde	10/1/2015	10/02/15	10/03/15	26.00	25.00	25.75	$ 1.00	$ 0.25	$ (2.38)	31,200	30	15
Palo Verde	10/2/2015	10/05/15	10/05/15	25.75	24.25	25.20	$ 1.50	$ 0.55	$ (0.55)	18,000	38	20
Palo Verde	10/5/2015	10/06/15	10/06/15	25.75	24.75	25.10	$ 1.00	$ 0.65	$ (0.10)	9,600	20	15
Palo Verde	10/6/2015	10/07/15	10/07/15	24.00	22.00	23.65	$ 2.00	$ 0.35	$ (1.45)	22,400	54	18
Palo Verde	10/7/2015	10/08/15	10/08/15	25.50	25.00	25.34	$ 0.50	$ 0.16	$ 1.69	16,400	38	18
Palo Verde	10/8/2015	10/09/15	10/10/15	30.00	27.50	28.56	$ 2.50	$ 1.44	$ 3.22	41,600	46	22
Palo Verde	10/9/2015	10/12/15	10/12/15	33.50	32.25	32.63	$ 1.25	$ 0.87	$ 4.07	16,800	42	18
Palo Verde	10/12/2015	10/13/15	10/13/15	37.00	33.00	34.71	$ 4.00	$ 2.29	$ 2.08	13,600	33	18
Palo Verde	10/13/2015	10/14/15	10/14/15	37.50	32.75	35.80	$ 4.75	$ 1.70	$ 1.09	11,600	27	17
Palo Verde	10/14/2015	10/15/15	10/15/15	32.25	31.75	32.14	$ 0.50	$ 0.11	$ (3.66)	11,200	26	14
Palo Verde	10/15/2015	10/16/15	10/17/15	29.50	28.25	28.82	$ 1.25	$ 0.68	$ (3.32)	20,000	22	13
Palo Verde	10/16/2015	10/19/15	10/19/15	28.25	26.75	27.41	$ 1.50	$ 0.84	$ (1.41)	10,400	25	18
Palo Verde	10/19/2015	10/20/15	10/20/15	26.00	25.25	25.91	$ 0.75	$ 0.09	$ (1.50)	12,800	29	15
Palo Verde	10/20/2015	10/21/15	10/21/15	26.25	25.50	25.80	$ 0.75	$ 0.45	$ (0.11)	18,400	42	18
Palo Verde	10/21/2015	10/22/15	10/22/15	25.50	24.75	25.26	$ 0.75	$ 0.24	$ (0.54)	9,200	22	15
Palo Verde	10/22/2015	10/23/15	10/24/15	25.50	23.50	23.76	$ 2.00	$ 1.74	$ (1.50)	24,000	27	17
Palo Verde	10/23/2015	10/26/15	10/26/15	26.00	25.00	25.59	$ 1.00	$ 0.41	$ 1.83	15,200	33	14
Palo Verde	10/26/2015	10/27/15	10/27/15	25.50	25.25	25.40	$ 0.25	$ 0.10	$ (0.19)	15,600	38	16

Palo Verde	10/27/2015	10/28/15	10/28/15	25.50	24.50	24.91	$ 1.00	$ 0.59	$ (0.49)	14,400	33	17
Palo Verde	10/28/2015	10/29/15	10/29/15	25.50	24.25	25.27	$ 1.25	$ 0.23	$ 0.36	11,600	29	17
Palo Verde	10/29/2015	10/30/15	10/31/15	22.50	21.50	22.11	$ 1.00	$ 0.39	$ (3.16)	16,000	18	12
AVERAGE OCTOBER PRICES/SPREADS				**$ 27.90**	**$ 26.38**	**$ 27.15**	**$ 1.52**	**$ 0.75**	**$ (0.35)**	**#####**	**33**	**17**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**5.6%**						
Palo Verde	10/30/2015	11/02/15	11/02/15	23.75	23.00	23.18	$ 0.75	$ 0.57	$ 1.07	8,000	20	9
Palo Verde	11/2/2015	11/03/15	11/03/15	23.00	22.50	22.63	$ 0.50	$ 0.37	$ (0.55)	12,000	27	17
Palo Verde	11/3/2015	11/04/15	11/04/15	24.00	22.75	23.05	$ 1.25	$ 0.95	$ 0.42	8,000	19	13
Palo Verde	11/4/2015	11/05/15	11/05/15	24.00	23.25	23.51	$ 0.75	$ 0.49	$ 0.46	8,000	19	12
Palo Verde	11/5/2015	11/06/15	11/07/15	24.50	23.50	23.76	$ 1.00	$ 0.74	$ 0.25	17,600	20	13
Palo Verde	11/6/2015	11/09/15	11/09/15	25.25	24.75	24.88	$ 0.50	$ 0.37	$ 1.12	6,800	17	12
Palo Verde	11/9/2015	11/10/15	11/10/15	24.75	23.00	24.00	$ 1.75	$ 0.75	$ (0.88)	10,800	24	13
Palo Verde	11/10/2015	11/11/15	11/12/15	24.50	23.50	23.91	$ 1.00	$ 0.59	$ (0.09)	23,200	28	14
Palo Verde	11/12/2015	11/13/15	11/14/15	23.25	23.00	23.12	$ 0.25	$ 0.13	$ (0.79)	12,000	14	8
Palo Verde	11/13/2015	11/16/15	11/16/15	23.00	22.50	22.67	$ 0.50	$ 0.33	$ (0.45)	14,400	33	14
Palo Verde	11/16/2015	11/17/15	11/17/15	25.50	22.75	23.11	$ 2.75	$ 2.39	$ 0.44	18,000	41	16
Palo Verde	11/17/2015	11/18/15	11/18/15	22.75	22.00	22.69	$ 0.75	$ 0.06	$ (0.42)	6,400	16	13
Palo Verde	11/18/2015	11/19/15	11/19/15	22.50	21.75	21.85	$ 0.75	$ 0.65	$ (0.84)	9,600	24	14
Palo Verde	11/19/2015	11/20/15	11/21/15	22.00	21.00	21.86	$ 1.00	$ 0.14	$ 0.01	17,600	16	11
Palo Verde	11/20/2015	11/23/15	11/23/15	21.40	20.50	21.17	$ 0.90	$ 0.23	$ (0.69)	8,000	17	12
Palo Verde	11/23/2015	11/24/15	11/25/15	23.00	21.25	21.79	$ 1.75	$ 1.21	$ 0.62	20,800	23	11
Palo Verde	11/24/2015	11/27/15	11/27/15	21.25	19.50	20.36	$ 1.75	$ 0.89	$ (1.43)	7,600	18	12
Palo Verde	11/25/2015	11/28/15	11/30/15	22.00	20.75	21.33	$ 1.25	$ 0.67	$ 0.97	12,800	16	12
AVERAGE NOVEMBER PRICES/SPREADS				**$ 23.36**	**$ 22.29**	**$ 22.72**	**$ 1.06**	**$ 0.64**	**$ (0.04)**	**#####**	**22**	**13**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**4.7%**						
Palo Verde	11/30/2015	12/01/15	12/01/15	24.50	22.00	24.06	$ 2.50	$ 0.44	$ 2.73	26,400	65	23
Palo Verde	12/1/2015	12/02/15	12/02/15	20.50	17.00	18.86	$ 3.50	$ 1.64	$ (5.20)	10,000	24	14
Palo Verde	12/2/2015	12/03/15	12/03/15	21.50	18.75	20.10	$ 2.75	$ 1.40	$ 1.24	8,800	22	15
Palo Verde	12/3/2015	12/04/15	12/05/15	20.00	19.25	19.72	$ 0.75	$ 0.28	$ (0.38)	7,200	9	7
Palo Verde	12/4/2015	12/07/15	12/07/15	21.50	20.50	21.14	$ 1.00	$ 0.36	$ 1.42	10,400	22	13
Palo Verde	12/7/2015	12/08/15	12/08/15	20.00	18.75	19.25	$ 1.25	$ 0.75	$ (1.89)	4,000	8	7
Palo Verde	12/8/2015	12/09/15	12/09/15	19.50	18.50	18.92	$ 1.00	$ 0.58	$ (0.33)	3,600	9	11

Palo Verde	12/9/2015	12/10/15	12/10/15	19.50	19.00	19.31	$ 0.50	$ 0.19	$ 0.39	3,600	9	8
Palo Verde	12/10/2015	12/11/15	12/12/15	19.50	19.25	19.32	$ 0.25	$ 0.18	$ 0.01	11,200	14	9
Palo Verde	12/11/2015	12/14/15	12/14/15	21.25	19.00	19.75	$ 2.25	$ 1.50	$ 0.43	8,000	15	12
Palo Verde	12/14/2015	12/15/15	12/15/15	21.25	20.25	20.69	$ 1.00	$ 0.56	$ 0.94	3,200	6	6
Palo Verde	12/15/2015	12/16/15	12/16/15	24.50	21.00	22.66	$ 3.50	$ 1.84	$ 1.97	7,200	17	13
Palo Verde	12/16/2015	12/17/15	12/17/15	24.25	23.50	23.91	$ 0.75	$ 0.34	$ 1.25	8,800	21	12
Palo Verde	12/17/2015	12/18/15	12/19/15	22.50	21.00	22.20	$ 1.50	$ 0.30	$ (1.71)	14,400	18	15
Palo Verde	12/18/2015	12/21/15	12/21/15	22.50	21.50	22.00	$ 1.00	$ 0.50	$ (0.20)	8,800	22	13
Palo Verde	12/21/2015	12/22/15	12/23/15	22.00	20.00	20.93	$ 2.00	$ 1.07	$ (1.07)	11,200	14	12
Palo Verde	12/22/2015	12/24/15	12/24/15	20.75	20.00	20.40	$ 0.75	$ 0.35	$ (0.53)	5,200	13	12
Palo Verde	12/23/2015	12/26/15	12/28/15	21.50	21.00	21.10	$ 0.50	$ 0.40	$ 0.70	12,000	15	12
Palo Verde	12/28/2015	12/29/15	12/29/15	29.50	26.00	27.87	$ 3.50	$ 1.63	$ 6.77	13,200	32	14
Palo Verde	12/29/2015	12/30/15	12/31/15	29.75	26.50	27.90	$ 3.25	$ 1.85	$ 0.03	14,400	18	15
Palo Verde	12/30/2015	01/02/16	01/02/16	25.50	23.00	24.15	$ 2.50	$ 1.35	$ (3.75)	4,800	12	9
Palo Verde	12/31/2015	01/04/16	01/04/16	25.75	22.00	22.95	$ 3.75	$ 2.80	$ (1.20)	2,000	5	5
AVERAGE DECEMBER PRICES/SPREADS				**$ 22.61**	**$ 20.81**	**$ 21.69**	**$ 1.81**	**$ 0.92**	**$ 0.07**	**9,018**	**18**	**12**
HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE						**8.3%**						

EXHIBIT 2

PJM WESTERN HUB PEAK PRICING JUNE 2015

Price hub	Trade date	Delivery start date	Delivery end date	High price $/MWh	Low price $/MWh	Wtd avg price $/MWh	Delta Between High/Low Price	Delta Between High/Wtd Avg Price	Weighted Price, Change from Prior Day	Daily volume MWh	Number of trades	Number of counterpartie
PJM WH R	5/28/2015	05/29/15	05/29/15	41.60	39.00	40.16	$ 2.60	$ 1.44	$ (10.69)	25,600	32	25
PJM WH R	5/29/2015	06/01/15	06/01/15	32.50	31.00	31.84	$ 1.50	$ 0.66	$ (8.32)	52,000	62	23
PJM WH R	6/1/2015	06/02/15	06/02/15	32.50	31.75	32.21	$ 0.75	$ 0.29	$ 0.37	30,400	38	29
PJM WH R	6/2/2015	06/03/15	06/03/15	31.90	30.00	30.86	$ 1.90	$ 1.04	$ (1.35)	54,400	68	33
PJM WH R	6/3/2015	06/04/15	06/04/15	31.00	30.00	30.55	$ 1.00	$ 0.45	$ (0.31)	24,800	29	26
PJM WH R	6/4/2015	06/05/15	06/05/15	33.50	31.00	32.40	$ 2.50	$ 1.10	$ 1.85	28,000	35	25
PJM WH R	6/5/2015	06/08/15	06/08/15	38.25	37.00	37.53	$ 1.25	$ 0.72	$ 5.13	24,800	30	23
PJM WH R	6/8/2015	06/09/15	06/09/15	38.50	37.00	38.05	$ 1.50	$ 0.45	$ 0.52	24,800	28	19
PJM WH R	6/9/2015	06/10/15	06/10/15	44.75	41.50	42.42	$ 3.25	$ 2.33	$ 4.37	39,200	49	30
PJM WH R	6/10/2015	06/11/15	06/11/15	60.00	56.25	58.12	$ 3.75	$ 1.88	$ 15.70	28,800	33	27
PJM WH R	6/11/2015	06/12/15	06/12/15	63.50	58.00	60.41	$ 5.50	$ 3.09	$ 2.29	41,600	51	25
PJM WH R	6/12/2015	06/15/15	06/15/15	47.50	44.00	45.70	$ 3.50	$ 1.80	$ (14.71)	46,400	56	31
PJM WH R	6/15/2015	06/16/15	06/16/15	50.25	45.40	48.55	$ 4.85	$ 1.70	$ 2.85	54,400	66	32
PJM WH R	6/16/2015	06/17/15	06/17/15	36.00	34.50	35.28	$ 1.50	$ 0.72	$ (13.27)	26,400	33	24
PJM WH R	6/17/2015	06/18/15	06/18/15	36.00	34.75	35.49	$ 1.25	$ 0.51	$ 0.21	95,200	117	36
PJM WH R	6/18/2015	06/19/15	06/19/15	38.75	37.50	38.16	$ 1.25	$ 0.59	$ 2.67	24,000	30	19
PJM WH R	6/19/2015	06/22/15	06/22/15	55.75	51.00	53.79	$ 4.75	$ 1.96	$ 15.63	44,000	54	26
PJM WH R	6/22/2015	06/23/15	06/23/15	78.90	70.00	75.12	$ 8.90	$ 3.78	$ 21.33	68,000	85	40
PJM WH R	6/23/2015	06/24/15	06/24/15	40.00	38.50	39.39	$ 1.50	$ 0.61	$ (35.73)	29,600	34	22
PJM WH R	6/24/2015	06/25/15	06/25/15	34.50	33.25	33.75	$ 1.25	$ 0.75	$ (5.64)	31,200	37	23
PJM WH R	6/25/2015	06/26/15	06/26/15	31.75	31.50	31.68	$ 0.25	$ 0.07	$ (2.07)	23,200	26	18
PJM WH R	6/26/2015	06/29/15	06/29/15	33.30	32.75	32.92	$ 0.55	$ 0.38	$ 1.24	9,600	10	13
PJM WH R	6/29/2015	06/30/15	06/30/15	34.00	33.00	33.44	$ 1.00	$ 0.56	$ 0.52	42,400	52	32
PJM WH R	6/30/2015	07/01/15	07/01/15	36.50	36.00	36.23	$ 0.50	$ 0.27	$ 2.79	12,800	16	19
						$ 40.59	$ 2.36		$ (0.61)	**36,733**	**45**	**26**

HIGH/LOW PRICE SPREAD AS PERCENTAGE OF WTD AVG PRICE **5.8%**

EXHIBIT 3

Highest Household Income Zip Codes in APS Service area

	Median Income	City	Az Median Household Income	Percent of Az Median	Customers	Customers on Bill Assistance	% of Customers on Bill Assistance	Solar	Solar Penetration
85255	$97,675	Scottsdale	$51,492	190%	26421	230	1%	521	1.9719%
85331	$78,245	Cave Creek	$51,492	152%	15029	335	2%	785	5.2232%
85259	$86,744	Scottsdale	$51,492	168%	11617	294	3%	276	2.3758%
85253	$117,487	Paradise Valley	$51,492	228%	9502	108	1%	271	2.8520%
85262	$96,067	Scottsdale	$51,492	187%	6786	23	0%	338	4.9808%
85054	$87,106	Phoenix	$51,492	169%	6403	75	1%	34	0.5310%
AVERAGES	**$93,887**			**182%**			**1.38%**		**2.9891%**

Lowest Household Income Zip Codes in APS Service area

	Median Income	City	Az Median Household Income	Percent of Az Median	Customers	Customers on Bill Assistance	% of Customers on Bill Assistance	Solar	Solar Penetration
85607	$21,131	Douglas	$51,492	41%	4354	1407	32%	39	0.8957%
85325	$18,681	Bouse	$51,492	36%	599	54	9%	8	1.3356%
86042	$17,963	Polacca	$51,492	35%	360	75	21%	0	0.0000%
86039	$13,437	Kykotsmovi Village	$51,492	26%	183	34	19%	0	0.0000%
86030	$10,625	Hotevilla	$51,492	21%	149	21	14%	4	2.6846%
85550	$15,483	San Carlos	$51,492	30%	11	1	9%	0	0.0000%
Averages $	**16,220**			**32%**			**17%**		**0.8193%**

Richest Neighborhood Penetration	**2.9891%**
Ratio of High Income to Low Income Solar Penetration	**3.65**
Richest Neighborhood Low Income Bill Assistance	**1.38%**
Poorest Neighborhood Low Income Bill Assistance	**17.00%**
Ratio of High Income to Low Income Bill Assistance	**12.32**
Average Income in Richest Neighborhoods	**$ 93,887**
Average Income in Poorest Neighborhoods	**$ 16,220**
Ratio of Income Differential, Richer vs Poorer	**5.79**