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Arizona Corporation Commission

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TO: The Arizona Corporation Commission
FROM: Robert Hoskins, Arizona Solar Power Society
DATE: November 16, 2010
DOCKET NO.: E-01345A-10-0262, E-01345A-10-0166
REGARDING: APS 2011 REST Implementation Plan

Dear Chairman Mayes and Commissioners:

The Arizona Solar Power Society recommends the following suggestions to be considered prior to approving the Arizona Public Service Co. (APS) 2011 REST Implementation plan:

1. Mandate APS to increase RES Adjustor collection from the planned 37% to 100% of the approved maximum RES adjustor, regardless of the RES requirements.
2. Mandate APS to collect the maximum adjustors equally from all e-Tariff classes.
3. Mandate APS to simplify their 2011 solar incentive programs to a single \$1.50 upfront incentive with a 5-kW cap for residential customers and 100-kW for commercial customers. This would reduce the staff needed to process contracts, reduce the regulatory work load for the AZCC and make solar simple for everyone.
4. Mandate APS to eliminate solar incentive programs, such as the Performance Based Incentive program, which have failed to achieve the same overwhelming success that has been achieved over the last nine years with upfront solar incentives.
5. Mandate APS to assign 100% of the Renewable Energy Credit (REC) to APS ratepayers since ratepayers are incurring 100% of the installation cost.
6. Mandate APS and all regulated utility companies to participate in a Solar REC (SREC) Trading Exchange that will allow investors, commercial customers and residential customers to buy/sell their SRECs as outlined at www.srectrade.com.
7. Mandate APS to setup specific solar carve outs that have to be met each year for the 2011 REST Implementation plan complete with a penalty for non-compliance, which is a requirement for establishing a SREC Trading Exchange.
8. Mandate APS to conduct solar town hall meetings to educate APS ratepayers on how the "trickle-down" effect of investing \$236 million on solar each year for the next 15 years would produce more than \$7 billion of free clean energy over the 25-year lifecycle of the solar investment.
9. Mandate APS to conduct solar town hall meetings the detail the number of jobs that would be created, the amount of salaries that would be injected back into the economy, the resulting tax revenue that would be generated for Arizona as solar installation companies buy office space, vehicles, office supplies and hardware from local retailers.



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- 42 10. Mandate APS to conduct solar town hall meetings to educate APS ratepayers on how
43 much free solar electricity can be generated with no fuel costs and no water waste.
- 44 11. Mandate APS to conduct solar town hall meetings to educate APS ratepayers on how
45 heavy penetrations of solar could save approximately \$3 billion over the next 15 years
46 as outlined in the R.W. Beck study by reducing fuel costs, reducing power purchases,
47 reducing operations and maintenance, reducing capital expenditures and reducing the
48 amount of power needed to be generated for the generation, transmission and
49 distribution of electricity. (<http://images.edocket.azcc.gov/docketpdf/0000093214.pdf>)
- 50 12. Mandate APS to conduct solar town hall meetings to educate APS ratepayers on the
51 health hazards of carbon-based pollution such as CO₂, SO₂, NO_x, Mercury and how
52 much pollution can be eliminated by migrating to solar power.
- 53 13. Mandate APS to conduct solar town hall meetings to educate APS ratepayers on the
54 amount of federal subsidies and tax breaks APS receives each year for coal, which
55 makes it affordable from APS produce power that is hazardous to ratepayers' health.
- 56 14. Mandate APS to raise their Net Metering tariff to match retail prices for electricity plus
57 a fair return on investment for investors that want to establish private solar incentive
58 programs. In this case, APS would be allowed to retain 100% of the SREC for solar
59 electricity purchased from ratepayers.

60 If recommendations such as these were adopted by all regulated utility companies, Arizona
61 would be able build a rejuvenated and thriving economy based on our largest natural resource,
62 a limitless supply of free solar energy.

63

64 **APS Ratepayer Commitment:**

65 APS needs to become more committed to ratepayers by making the wisest and the most prudent
66 decisions possible when investing ratepayer's hard earned money to produce clean, cost-
67 effective power generation.

68

69 Ratepayers need APS to invest less in carbon-based power generation, which harms the
70 environment and costs ratepayers hundreds of millions of dollars to buy special equipment to
71 sequester and scrub polluted air before it is released over ratepayer's homes, schools and
72 neighborhoods. APS should invest more in solar, which produces zero carbon emissions.

73

74 Arizona ratepayers need clean air to breathe, a safe place to raise their children, low electricity
75 bills, and an economic climate that stimulates growth and creates good paying jobs.

76

77 Each year ratepayers are actively investing in Arizona's future by paying their electricity bill.
78 Monthly electric bills contain a very high charge for producing dirty power that is polluting
79 Arizona's environment; is wasting our precious water supply; and requires the burning of
80 hundreds of millions dollars worth of coal & gas each year. Burning coal is a necessary evil,
81 but it is very expensive and ratepayer's electricity rates will continue to rise as fuel costs go up.

82



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83 The same electric bill only dedicates a few dollars of the total bill to invest in clean sources of
84 renewable energy. The cost of solar fuel never goes up. Solar power arrays produce free
85 electricity. They have a fuel cost of zero. And they produce zero pollution.
86 The hundreds to thousands of dollars per month that ratepayers are required to invest each
87 month in dirty power has made APS one of the largest and most wealthy companies in Arizona.

88
89 APS should consider returning the favor to their ratepayers by serving as a responsible
90 corporate citizen and providing an example of how a monopoly utility should use its wealth and
91 power to serve as a conscientious steward to shore up the customers who have made them
92 wealthy. It is time for APS and Pinnacle West to invest their profits back into the community
93 they serve in order to provide a cleaner environment for Arizonans to live, breathe and raise
94 their children.

95
96 APS should be investing significantly more money per year of its capital budget, the coal and
97 gas subsidies it receives from the federal government as well as 100% of the money collected
98 through power purchase agreements and renewable energy adjustors into incentive programs
99 that allow its ratepayers to invest in clean renewable energy power generation.

100
101 APS should remember that the money collected each month is the ratepayer's money and that it
102 should be invested with their best interests in mind. Preventing ratepayers from spending as
103 much money as possible on solar power installations is very detrimental to ratepayers. It
104 prevents them from saving billions of dollars as detailed in the APS-R.W. Beck study.

105

106 **Coal and Gas Power Generation is Expensive and Poisonous**

107 Coal plants burn millions of tons of coal per year at an extremely high fuel cost. The byproduct
108 of burning gas and coal are millions of tons of air pollution as well as billions of gallons of
109 water that are lost to produce steam for power generation turbines. Maintenance and operation
110 costs of power generation stations consume vast amounts of money. The life cycle of a power
111 plant is 35 years and they each cost half a billion dollars to build. More than 30% of a power
112 generation station's electricity production is generated in order to push electricity down
113 transmission and distribution lines due to large amounts of line loss incurred when sending
114 power from a power generation station to the customer's premises. Dirty power is cheap only
115 because of federal subsidies make it cheap. Are utilities entitled to these fossil fuel subsidies?

116

117 **Solar Photovoltaic (PV) Power Generation is Free & Pollution Free**

118 Solar photovoltaic distributed energy systems require zero fuel, produce zero emissions and
119 require very little maintenance once installed. They have a guaranteed life cycle of 25 years,
120 but many solar panels produce free electricity for up to 30 to 40 years. When installed on a
121 ratepayer's rooftop, a solar PV system greatly reduces the customer's on-peak electricity
122 demands and can significantly reduce many of the expenses associated with producing and
123 transmitting electricity from the power generation station to the end user's premises. The
124 bottom line is that solar is much cheaper to operate than fossil fuel power generation stations.
125 APS would save \$3 billion over the next 15 years with a heavy penetration of solar. Should the
126 solar industry be entitled to the exact same level of incentives as coal and gas? Yes, indeed.

127



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128 **APS Research Details \$3 Billion of Solar Savings in the R.W. Beck Study**

129 In 2009, APS filed a copy of the R.W. Beck study with the Arizona Corporation Commission.
130 The study illustrates how heavy deployments of solar can save APS approximately \$3 billion
131 over the next 15 years by reducing fuel costs, reducing power purchases, reducing operations
132 and maintenance, reducing capital expenditures and reducing the amount of power needed to be
133 generated for the generation, transmission and distribution of electricity.

134
135 On page XXIV of the Executive Summary, the study includes a graph that shows that
136 producing 1,000,000 Megawatt-hours (MWh) of solar power would save APS \$100,000,000 on
137 a multitude of electricity grid operating expenses.

138
139 The same graph shows APS' goal of generating more than 3,850,000 MWh of solar power by
140 the year 2025. To accomplish this goal APS would need to install 250,000+ MWh each year
141 from 2010 through 2025. On page 6-21, the study states that this goal would require the
142 installation of 18,000 to 400,000 solar power installations. APS is installing less than 3,000
143 systems per year. And most solar power arrays that are installed are small residential systems.
144 Over the last nine years, APS only installed 184 commercial solar power arrays.

145
146 The study says that without a high deployment of solar power, APS will fail to meet its
147 mandated Renewable Energy Standard goal by the year 2025. APS should be required to raise
148 residential installations to more than 5,600 solar PV arrays capped at 5-kW and more than
149 1,000 non-residential solar arrays capped at 100-kW per year to meet their RES goal.

150
151 **Solar Represents Arizona's Best Opportunity for Economic Development**

152 It would be beneficial for the Arizona Governor's Office, the Arizona State Legislature and the
153 Arizona Corporation Commission to work together to harness the most abundant resource that
154 Arizona has available, solar energy. Producing solar power represents the best economic
155 development opportunity that Arizona has ever seen. Arizona could solve its air pollution,
156 water usage and unemployment problems – all at the same time – by mining solar energy.

157
158 In 2009, our entire state watched how the responsible spending of \$185 million worth of
159 renewable energy and demand side management incentives created more than 275 new
160 solar/energy efficiency installation companies and generated more than 3,000 good paying
161 jobs. APS' solar upfront incentives were responsible for a large portion of that growth.

162
163 All regulated Arizona utility companies have the power and money available to ensure that this
164 trend continues. Instead of putting on the brakes on and trying to control solar growth by
165 reducing incentive programs and creating waiting lists, utility companies should be collecting
166 and investing 100% of the Renewable Energy Standard (RES) adjustors collected back into the
167 local economy.

168
169 And if need be, utility companies should begin investing additional financial capital and federal
170 subsidies to achieve the cost savings that are defined clearly in the R.W. Beck study. This
171 money must be invested now to save ratepayers billions of dollars over the next 25 years.

172



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173 **How Much Ratepayer Money Is Being Collected to Support Renewable Energy?**

174 It is impossible to obtain accurate information on how much Renewable Energy adjustors are
175 being collected each year by regulated Arizona utility companies. It would seem that this
176 information would be published and readily available to ratepayers that want to see what their
177 monthly electricity bill is funding. It would be nice to see this information published in every
178 utility Renewable Energy Standard Tariff (REST) Implementation plan, but right now this
179 information seems to be hidden at all costs from the ratepayers who contribute to this fund.

180
181 The utility companies should include charts that show how many customers are in each tariff
182 class and exactly how much money is being collected from each tier to support the RES on a
183 yearly basis. The charts should also detail exactly where every penny of RES is spent and
184 reviewed by the Commission's Staff to make sure utility companies invest all of the RES
185 money collected back into the same ratepayer tier from which it was collected.

186
187 On page 1-11 the R.W. Beck study details the number of customers that APS had in 2008.
188 These numbers need to be increased for 2010 when reviewing the charts below, but they
189 provide a pretty close estimate of APS' existing customer base.

190
191 We contacted APS and made a request for them to provide accurate numbers for 2009, 2010,
192 and 2011 to clear up this matter for our APS Stakeholder meeting. APS refused to provide this
193 information in the format we requested it. APS did file some vague 2010 figures several weeks
194 later (<http://images.edocket.azcc.gov/docketpdf/0000118825.pdf>) under docket E-01345A-09-
195 0338 on October 14, 2010.

196
197 APS has stated that they did not collect as much as originally was planned. The numbers they
198 did provide raise a couple of questions that need to be addressed:

- 199 1. Why does APS not collect the full RES adjustors approved by the Commission?
200 2. Why was 100% of the RES Adjustor not collected from 100% of the customer base?
201 3. What rule needs to be passed to encourage APS to collect 100% of the RES Adjustor?
202 4. Why did 80% of residential customers pay the max RES adjustor and 20% did not?
203 5. Why did 8% of non-residential customers pay the max RES adjustor and 92% did not?
204 6. Did APS really see a drop in ratepayer electricity usage of by 60%?
205 7. Why did APS not break their numbers out as requested so that ratepayers can see
206 exactly how much was collected from each ratepayer e-tariff class?
207 8. Why did APS not break their numbers out as requested so that ratepayers can see
208 exactly how much will be reinvested back into each ratepayer e-tariff class?
209 9. Why is there a disclaimer at the bottom of the document stating that these figures
210 should not be relied upon for purposes of trading any security? Are they incorrect?

211

212



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213 **Collecting and Spending 100% of the RES Adjustor**

214 For the record, the maze that surrounds the method of how the RES adjustors are collected is
215 very difficult to navigate and understand. It is anything but transparent. APS has stated that
216 these figures are heavily audited. If so, we would like to know who audits these numbers and
217 why the figures are not presented in an easy to understand format so that ratepayers, solar
218 installation companies and the Commission can understand them without an explanation from
219 APS.
220

221 According to our estimates the 2011 RES Adjustor budget would resemble the figures below if
222 APS actually collected 100% the money they are approved to collect by the Commission for
223 RES programs. We used the total APS customer counts for 2008, which were 1,063,125.
224 APS' recent filing provided an average of 1,123,902 customers per month during 2010. If so,
225 the figures below should be increased by approximately six percent for 2011.
226

227 ***Proposed APS 2011 RES Adjustor Maximum Collections (See Exhibit A)***

228
229 *Proposed Residential 2011 RES Adjustors Collected:*

<u>Tariff</u>	<u>Customers</u>	<u>Percent</u>	<u>Adjustor</u>	<u>RES Collected</u>
230 E10	69,731	6.56%	\$4.05	\$3,388,927
232 E12	437,213	41.13%	\$4.05	\$21,248,552
233 ET-1	339,594	31.94%	\$4.05	\$16,504,268
234 ET-2	36,083	3.39%	\$4.05	\$1,753,634
235 ECT-1	54,789	5.15%	\$4.05	\$2,662,745
236 ECT-2	8,566	0.81%	\$4.05	\$416,308
237 Total:	945,976			\$45,974,434

238
239 *Proposed Non-Residential 2011 RES Adjustors Collected:*

<u>Tariff</u>	<u>Customers</u>	<u>Percent</u>	<u>Adjustor</u>	<u>RES Collected</u>
240 E32 xSmall	90,811	8.54%	\$150.53	\$164,037,358
242 E32 Small	20,496	1.93%	\$150.53	\$37,023,155
243 E32 Medium	4,535	0.43%	\$150.53	\$8,191,843
244 E32 Large	893	0.08%	\$150.53	\$1,613,079
245 E32 xLarge	196	0.02%	\$150.53	\$354,047
246 E32 TOU xSmall	52	0.00%	\$150.53	\$93,931
247 E32 TOU Small	91	0.01%	\$150.53	\$164,379
248 E32 TOU Medium	47	0.00%	\$150.53	\$84,899
249 E32 TOU Large	20	0.00%	\$150.53	\$36,127
250 E32 TOU xLarge	8	0.00%	\$451.60	\$43,354
251 Total:	117,149			\$211,642,170

252
253 The APS REST Budget was \$78.4 million in 2009, \$86.7 million in 2010 and \$96.4 million is
254 proposed for 2011. But when we run our estimates using the RES Adjustors it looks like APS
255 was authorized to collect \$201 million in 2009, \$201 million in 2010 and may be approved for
256 \$257 million for 2011. There is a difference of \$123 million in 2009, a difference of \$115
257 million in 2010 and a difference of \$161 million proposed for 2011.
258



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259 APS stated that it collects a fixed RES Adjustor amount per month from each customer and that
260 it is capped at a certain point per month. The only way we see the RES adjustors falling short
261 of their collection goal is for ratepayers to reduce their electricity usage or through customer
262 attrition rates.

263
264 It is hard to believe that APS electricity sales declined by 61% in 2009, 57% in 2010 and 63%
265 in 2011. In fact, based on APS' 10/14/2010 filing it looks like customer counts actually have
266 risen six percent since 2008.

267
268 What needs to be done in order to collect 100% of the RES from 100% of the customer base?
269 Why did APS not collect this money? Or is there a chance that this money was collected and
270 spent on other programs? Or did APS not collect it because the RES goals did not require it?
271 If so the Commission should consider raising the RES goal from 15% to 30% to remove this
272 roadblock from collecting sufficient RES funding for heavy solar deployments.

273
274 In our humble opinion, the Commission should consider installing a better system of checks
275 and balances that will allow ratepayers, solar installation companies, and the Commission to
276 see exactly how much money is being collected and where the money is being spent.

277
278 **APS 2011 REST Implementation Budget at Maximum RES Collection**

279 It appears that APS has never been able to collect the full RES Adjustor from its entire
280 customer base. But if APS was able to collect 100% of their RES Adjustors, according to our
281 estimates, the APS 2011 REST would be able to collect approximately \$46 million from
282 Residential ratepayers and \$212 million from Non-Residential ratepayers for a combined total
283 of \$258 million.

284
285 Based on the last several REST plan budgets, the Commission could establish a solar carve out
286 that dedicates of 95% of the Residential budget and 92% of the Non-Residential budget to solar
287 photovoltaic (PV) arrays. This would equate to \$43.7 million for Residential and \$195.4
288 million for Non-Residential for a combined total of \$239.1 million.

289
290 It would be very helpful if all Arizona public service companies were required to streamline
291 their solar incentive programs and make them very easy to understand. Providing a uniform
292 upfront incentive for every ratepayer and keeping it consistent throughout the year until the
293 money runs out would make the program very easy to understand and manage. Solar
294 installation contracts would become predictable, standardized and quick to process. Waiting
295 lines need to be eliminated completely. They severely disrupt smooth solar business
296 operations.

297
298 For example, if an upfront incentive of \$1.50 per watt for both Residential and Non-Residential
299 PV installations was offered for the entire 2011 calendar year it would eliminate a lot of
300 confusion that was associated with changing incentives and deadlines prevalent in 2010.

301



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302 To make the money go as far as possible the Commission should implement a cap of 5-
303 kilowatts or \$7,500 per rooftop per year for Residential customers and 100-kilowatts or
304 \$150,000 per rooftop per year for Non-Residential customers.

305
306 This would allow more than 5,800 Residential and 1,300 Non-Residential PV installations to be
307 installed that would produce 252 Megawatt hours of solar electricity per year. (See Exhibit B)

308
309 These combined solar incentive programs would generate almost \$19 million of free solar
310 electricity in the first 12 months of operation. Over their 25-year lifecycle, an investment of
311 \$236 million in solar PV in 2011 would produce more than \$469 million of free solar electricity
312 for ratepayers, representing almost a 200% return on investment. This does not include the
313 additional cost savings that APS would enjoy according to the R.W. Beck study. In also does
314 not include the savings that would be possible as carbon fuel rates continue to rise.

315
316 At an installed cost of \$4.50 per watt for solar installations, a \$236 million solar incentive
317 program require residential and commercial customers to invest an additional \$475 million to
318 fund their portion of the installation not covered by the upfront incentives. As a result, the
319 Arizona economy would enjoy an injection of \$711 million back into the local economy each
320 year. This is just APS' portion of solar incentives. Add up the solar incentive programs for
321 each regulated utility company and the economic impact increases dramatically.

322
323 A streamlined solar incentive program would eliminate the need for a Feed-in Tariff,
324 Performance Based Incentive, Schools/Government, Homebuilders, Powerful Communities and
325 Small Generator programs and the personnel needed to manage them.

326
327 Contracts should be processed on a first come, first serve basis. Once solar budgets are
328 exhausted customers and solar installation companies are notified new contracts will not be
329 accepted until January 1st of the following year. If budgets are exhausted, budgets can be
330 increased and funded through the savings that APS should realize through savings notated in
331 the R.W. Beck study, which notes that the first dollar invested in solar is more valuable to APS
332 than the last. Why not invest more money sooner than later per the study's recommendation?

333
334 This program offers the same incentive to everyone and it is fair to all ratepayers. It is very
335 easy to understand. It provides no roadblocks and is very easy to manage. It levels the playing
336 field for all solar installation companies and provides the same equal opportunity for small
337 companies as it does to APS Energy Services.

338
339 **Recommended APS 2011 REST Implementation Changes:**
340 APS should implement a 2011 REST plan that benefits all ratepayers equally. They should be
341 required to reinvest RES funds back into the tariff class from which the money was collected.

342
343 The best way to achieve this goal is to offer an upfront incentive of \$1.50 per watt for all
344 ratepayers and keep it consistent for 12 months. A program with these guidelines would
345 provide ratepayers with a predictable upfront incentive and make it easy for solar installation



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346 companies to write accurate contracts. Budgets can be tracked by e-tariff rate class and any
347 unused funds can be redistributed to among ratepayer segments that are oversubscribed.

348
349 A uniform upfront incentive will eliminate the need for a Schools/Government/Non-Profit
350 incentive program. Most schools/government buildings would be able to utilize the upfront
351 incentives combined with the recently approved Solar Service Agreements, which can leverage
352 solar lease agreements and the transfer of tax equity debt to private investors.

353
354 A uniform upfront incentive will eliminate the need for a Performance Based Incentive (PBI),
355 which is a good thing because the PBI program is very difficult to understand and has not
356 delivered a significant amount of solar installations.

357
358 The PBI program should be eliminated because it ties up money and simply does not produce
359 the number of solar installations at the same rate that an upfront incentive program would
360 produce.

361
362 To prove this point one only has to look at the historical figures contained in the
363 ([http://www.aps.com/ files/solarRenewable/REIPQuarterly.pdf](http://www.aps.com/files/solarRenewable/REIPQuarterly.pdf)) 2010 APS Renewable Energy
364 Incentive Program Quarterly Update. Over the past three years the APS Non-Residential solar
365 PV on-grid and off-grid incentive programs have only produced 137 installations or an average
366 45 systems per year. Thus, it should be eliminated for poor performance versus upfront
367 incentives, which accrued 3,453 installations during the same time frame.

368
369 The \$1 Rapid Refund program needs to be eliminated because it will propagate detrimental
370 business practices. When small companies are in danger of going out of business they may be
371 forced to cut corners that might lead to sub-par solar installations and might result in an
372 increase of solar installation safety hazards.

373
374 According to the R. W. Beck report, APS needs to install 250,000 MWh of solar per year over
375 the next 15 years in order to save approximately \$3 billion in operating costs.

376
377 APS should spend 95% of its Residential RES budget, after administrative costs, on Residential
378 Solar Upfront Incentives (UFI), which should equal approximately \$42 million. If solar
379 installations were capped at 5-kilowatts per household per year and the solar upfront incentive
380 offered was \$1.50 per watt, it would provide sufficient funding to install 5,656 residential solar
381 systems - twice the figure of 2,400 offered by APS' 2011 proposal (See Exhibit B).

382
383 The opportunity for Non-Residential solar installations is even greater. As of Q3 2010, APS
384 had only installed 59 Non-Residential solar systems. In 2009, the yearend total also was only
385 59 Non-Residential solar systems. This is because APS' Non-Residential Performance Based
386 (PBI) Solar Incentive Program is simply is not effective and has failed to produce a high
387 penetration level of solar installations on commercial rooftops. APS should be providing
388 incentives substantial enough to install 1,000 systems per year, but the PBI system has fallen
389 short over the last three years and needs to be eliminated.

390



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391 As mentioned above, instead of using a PBI program, APS would be much wiser to copy the
392 proven success that the Residential Solar UFI program has generated. Over the past nine years,
393 the Residential Fixed Cost-Per-Watt Upfront Incentive program has produced one of the most
394 successful solar installation programs in the history of Arizona. According to APS Q3 2010
395 Incentive Quarterly Update, even though the average system size is smaller, the APS
396 Residential program, to date, has installed 24,537-kW compared to APS Non-Residential which
397 has only installed 8,727-kW. Upfront Incentives are much more effective than PBI Incentives.

398
399 Based on this track record, the Commission needs to completely abolish APS' PBI program
400 and replace it with an APS Non-Residential fixed Upfront Incentive of \$1.50 per watt and cap
401 systems at 100-kilowatts per year. If not, APS may not achieve its 2025 RES goal.

402
403 Based on our projections for 2011, APS should spend 92% of its Non-Residential RES budget,
404 after administrative costs, on Non-Residential Solar Upfront Incentives, which would equal
405 \$193 million. If solar installations were capped at 100-kW per rooftop per year and the solar
406 upfront incentive offered was \$1.50 per watt, it would provide sufficient funding to install
407 1,291 Non-Residential solar systems, a significant increase from 59 systems in 2010 (See
408 Exhibit B).

409
410 Combined the 2011 Residential and Non-Residential solar carve out for both on-grid and off-
411 grid solar photovoltaic systems should equal \$236 million. This budget would allow APS
412 ratepayers to produce 252 megawatt hours (MWh) of free and non-polluting electricity.

413
414 Regardless of the RES goals, APS should be spending the maximum amount possible on solar
415 installations in order to provide ratepayers with the best opportunity to save \$3 billion over the
416 next 15 years by producing clean electricity that requires no fuel and produces zero pollution.

417
418 **How Much Money Would APS Ratepayers Save?**

419 Using an average residential tariff of \$0.123 cents-per-kilowatt hour and an average non-
420 residential tariff of \$0.064 cents per-kilowatt-hour, 252 MWh would produce \$18,786,380 of
421 free electricity in the first 12-months of operation. Over the solar panel's 25-year lifecycle they
422 would provide approximately \$469,659,496 of free electricity (See Exhibit B). It is important
423 to note that these figures do not include future electricity rate hikes that are most likely to go up
424 at six percent a year. Ratepayers' savings will be much higher as electricity rates increase.

425
426 From a ratepayer's perspective investing \$236 million in 2011 to produce \$469 million of free
427 clean electricity over the next 25 years offers a very impressive return-on-investment. Increase
428 the RES Adjustor by a factor of two and these cost savings would double. So why not double
429 the RES requirements from 15% to 30% for every electric utility company in Arizona?

430
431 And investing \$236 million on solar each year for the next 15 years and the total savings to
432 ratepayers would grow to more than \$7,044,892,439 (See Exhibit B).

433



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434 Investing \$3.5 billion over 15 years to produce a return on investment of \$7 billion over the
435 solar panel's 25 year cycle is an extremely good deal for ratepayers, our environment and
436 Arizona's economic recovery.

437

438 **Ratepayer's Trickle-Down Effect on Arizona's Solar Economic Development**

439 As seen in 2009, the solar incentive programs made possible by monthly ratepayer RES
440 adjusters had a tremendous effect on the local economy.

441

442 Implementing a simple and easy to understand solar upfront incentive with a fixed cost-per-watt
443 price would create an economic boom that would ripple through every sector of the state's
444 economy and eliminate Arizona's recession.

445

446 Spending \$236 million at an incentive of \$1.50 per watt would allow ratepayers to install
447 157,390,984 watts of solar power.

448

449 To keep the math simple, if installers were installing 200-watt panels, this would require the
450 purchase and installation 786,955 solar panels each year or 11,804,325 solar panels over 15
451 years. A solar market of this magnitude would entice every solar panel manufacturer in the
452 world to open a solar manufacturing plant in Arizona. (See Exhibit C)

453

454 If solar panels were priced at a \$1.75 watt, this would generate solar panel sales of
455 \$275,434,222 the first year or \$4,131,513,330 over 15 years. (See Exhibit C)

456

457 If the solar installation was priced at \$4.50 per-installed watt, it would generate solar
458 installation revenue of \$708,244,775 the first year or \$10,623,671,618 over the next 15 years
459 (See Exhibit C).

460

461 Imagine the Arizona tax revenue that would be achieved when solar installation companies
462 spend their \$708 million of revenue on new vehicles at car dealerships, hardware at electrical
463 distributors, rental space in office buildings, and all types of supplies from local retailers.

464

465 A typical solar installation company with 10 employees can install sixty 5-kW solar power
466 arrays per year. The revenue mentioned above would create the sufficient funding to support
467 525 companies that would create or maintain approximately 5,246 solar jobs.

468

469 At an average salary of \$35,000, this would create \$183,619,016 of new salaries. As more
470 people gain good paying jobs every citizen in Arizona will benefit as these salaries are injected
471 back into the local economy (See Exhibit C). There is no other industry in Arizona that can
472 produce this many jobs in less than 12 months with the resources that are available right now.

473

474 Solar is great way for city and towns all across Arizona to replenish their operating budgets. If
475 every city in Arizona charged \$300 for solar installation permit fees, approximately 31,478
476 solar installations would generate \$9,443,400 per year for local government budgets (See
477 Exhibit C). Many cities charge up to \$10,000 per commercial solar installation permit fees.

478



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479 Investing in solar power is one of the best investments a ratepayer will ever make. And unlike
480 most investments, this return-on investment will be realized quickly. The free electricity, solar
481 installation revenue, new jobs and salaries and tax revenue will benefit everyone in Arizona.
482

483 **Recommendation to Build a Solar REC Trading System in Arizona**

484 In addition to the recommended changes in APS solar incentive programs, the Commission
485 should consider establishing a statewide Renewable Energy Credit (REC) Trading System
486 (www.srectrade.com) that will allow ratepayers to retain their Renewable Energy Credits such
487 as Solar Renewable Energy Credits (SRECs) and sell them in an open market. An SREC
488 trading system will encourage financial investment firms to build competing solar incentive
489 programs that are willing to trade solar incentives for Arizona SRECs.
490

491 APS presented a slide at our stakeholder meeting that has their Arizona SREC value priced at
492 \$125-\$160 per MWh. If APS or their customers were allowed to invest in solar and sell these
493 SRECs to other states they could make a tremendous amount of money. Investors would gladly
494 invest in building solar power arrays in Arizona with the goal of selling their SRECs at five
495 times their worth to other states. For example, check out the price that will be paid for an
496 SREC in the following states as of October 2010: NJ - \$693, DC - \$500, DE - \$400, MD -
497 \$400, MA - \$600, OH - \$400. SRECs could fund Arizona's solar incentive programs.
498

499 In order to create a SREC trading market several things are needed. First, the Commission
500 should consider establishing a Renewable Energy Non-Compliance penalty for every regulated
501 public service company that does not meet its RES target by 2025. Next, the Commission
502 should consider establishing specific solar carve outs that every regulated public service
503 company must be required to meet on a yearly basis in order to be in compliance with
504 Arizona's RES 2025 target. An RES increase from 15% to 30% is highly recommended.
505

506 Once a non-compliance penalty and specified solar carve outs are in place, the Commission
507 should consider creating or participating in a Southwest Renewable Energy Credit Trading
508 System similar to the SREC Trading System being used in the northeast. A southwest or
509 nationwide SREC trading system will make it possible for ratepayers and Arizona utilities to
510 export renewable energy credits to other states for a lucrative return on investment.
511

512 Instead of assigning the SRECs to the utility company, all SRECs need be assigned to the solar
513 installation company or the customer who pays for the installation. Ratepayers are paying the
514 bulk of the solar installation costs and all incentives being paid out are, in fact, ratepayer
515 money. Thus, solar installation companies or the customer should be awarded the full value of
516 the SREC to sell on the open market. Doing so will provide a valuable business opportunity for
517 financial investors, solar installation companies and customers that want to invest in solar
518 installations today in order to reap the rewards of selling SRECs to utilities tomorrow.
519

520 This will create a competitive situation for the installation of solar power arrays. The current
521 system allows all utility companies to control the solar market using their renewable energy
522 incentive programs. Once SRECs become a tradable commodity, solar panel manufacturers,
523 finance companies and a number of other corporations would see the value of setting up their
524 own finance program to provide their own upfront incentives and finance programs that will
525 make it easy for customers to afford solar in return for the profit value of the SRECs.



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526 Smart investment firms will begin accruing SRECs knowing that they will increase in value
527 over time as “carbon taxes” and “cap and trade” programs make their way into the public
528 policy. This strategy will eliminate the need for ratepayer-funded incentive programs and make
529 solar a mainstream business opportunity.
530

531 An SREC trading system will force utility companies such as APS to become much more
532 competitive in their desire to install solar power arrays. If not, they run the risk of losing SREC
533 market share and paying a much higher rate for SRECs five to ten years from now. And if
534 utility companies lose their ability to use ratepayer funding to accrue SRECs, their stockholders
535 suddenly will see the value in making large capital investments in solar now to avoid dramatic
536 increases in SRECs that the utility will have to buy in the future to offset their carbon power
537 production liability.
538

539 **Conclusion:**

540 The Commission should consider mandating APS and every other electric utility company to
541 collect and invest the maximum amount of ratepayer RES adjustor funds in renewable power
542 generation that has been well documented in studies such as the R.W. Beck report that detail
543 how solar can save ratepayers billions of dollars on their future electric bills through reduced
544 fuel costs, reduced power purchases, reduced operations and maintenance, reduced capital
545 expenditures and the reduced amount of power needed to be generated for the generation,
546 transmission and distribution of electricity.
547

548 There is no understandable reason to allow APS to maintain their monopoly control over the
549 solar industry by the continued practice of shrinking solar incentive programs and
550 implementing programs that may prohibit or inhibit the widespread heavy deployment of solar
551 installations. APS currently cites the RES as their main reason to constrain their solar incentive
552 programs. Increasing the RES from 15% to 30% by 2025 would remove this constraint.
553

554 The Commission should consider eliminating programs like the PBI program that are
555 confusing, hard to understand, tie up large amounts of solar funding and then simply do not
556 deliver the desired level of solar adoption demanded by ratepayers who want to migrate to
557 clean energy in order to make Arizona a safer place to live and create badly needed jobs.
558

559 The Commission should consider eliminating REST implementation strategies that may
560 provide an unfair business advantage or concession to any mutually exclusive solar installation
561 company.
562

563 The Commission should consider eliminating any renewable incentive program that may allow
564 certain groups of customers or installation companies to take short cuts, regardless of lower
565 incentive costs. Ratepayers need to be served in the order they sign solar installation contracts.
566

567 Investing \$236 million of APS ratepayer money on solar power during 2011 has the potential to
568 produce \$469 million worth of free clean electricity over the next 25 years.
569

570 Investing \$236 million of APS ratepayer money on solar power during 2011 has the potential to
571 create 5,200 badly need jobs that would create \$183,619,016 of new salaries and \$708,244,775
572 of solar installation revenue that would trickle down to a every segment of Arizona’s general
573 population.



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574
575 Investing \$236 million of APS ratepayer money would create an attractive market for the
576 manufacture of 786,939 solar panels.
577
578 Solar upfront incentive programs were proven to be very successful in 2009. They would have
579 been very successful again in 2010, but the solar incentive budget was decreased by \$20
580 million.
581
582 Providing increased solar incentive budgets by collecting the maxim RES adjustor possible and
583 reinvesting ratepayer money on heavy deployments of solar is the single best way to help
584 ratepayers save money and to create badly needed jobs in Arizona.
585
586 Please make it possible for APS ratepayers to be able to invest the maximum amount possible
587 in solar and other types of renewable energy to maximize the installation and utilization of this
588 endless supply of free, clean energy in order to drive a dramatic economic recovery. It is in the
589 ratepayer's best interest to invest heavily in solar.
590
591 Solar is the brightest spot in Arizona's economic future. Let's all work together to develop
592 solar energy for the safety, health and economic development that would benefit every single
593 citizen that lives, breathes and raises children in Arizona.

594
595 Respectfully submitted on this 16th day of November 2010.

596
597
598
599
600
601 By  _____
602 Robert Hoskins
603 Executive Director
604 Arizona Solar Power Society

APS 2011 REST Plan - Exhibit A
 2011 Maximum Proposed RES Adjustor Collection

Tariff	Description	# of 2008 Customers	RES 2011 Tariff	RES Collected 2011
E10	Residential Classic Rate	69,731	4.05	\$3,388,927
E12	Residential Standard Rate	437,213	4.05	\$21,248,552
ET-1	Residential Time Advantage 9:00 pm - 9:00 am	339,594	4.05	\$16,504,268
ET-2	Residential Time Advantage 7:00 pm - Noon	36,083	4.05	\$1,753,634
ECT-1	Residential TOU (9-9) with demand charge	54,789	4.05	\$2,662,745
ECT-2	Residential TOU (9-9) with demand charge	8,566	4.05	\$416,308
	Total:	945,976		\$45,974,434
Tariff	Description	# of 2008 Customers	RES 2011 Tariff	RES Collected 2011
E32 xSmall	Commercial 0 - 20 kW	90,811	\$150.53	\$164,037,358
E32 Small	Commercial 21 - 100 kW	20,496	\$150.53	\$37,023,155
E32 Medium	Commercial 101 - 400 kW	4,535	\$150.53	\$8,191,843
E32 Large	Commercial > 400 kW	893	\$150.53	\$1,613,079
E32 xLarge	Industrial	196	\$150.53	\$354,047
E32 TOU xSmall	Commercial TOU 0 - 20 kW	52	\$150.53	\$93,931
E32 TOU Small	Commercial TOU 21 - 100 kW	91	\$150.53	\$164,379
E32 TOU Medium	Commercial TOU 101 - 400 kW	47	\$150.53	\$84,899
E32 TOU Large	Commercial TOU > 400 kW	20	\$150.53	\$36,127
E32 TOU xLarge	Industrial TOU	8	\$451.60	\$43,354
	Total:	117,149		\$211,642,170
Total Customers	1,063,125			
2011 Proposed REST Budget	\$96,400,000	37.42%		
2011 REST Funds Collected	\$257,616,604			
Unallocated Funds	\$161,216,604	62.58%		

APS 2011 REST Plan - Exhibit B

Return on Investment Under Maximum RES Adjustor Expenditure with \$1.50 Upfront Incentive

Residential 2011 RES Budget	Incentive Budget	UFI	Cap Watts	Total	# of Systems	Total Watts Installed	kW Installed	Total kWh at 1,600 kWh Per System	MWh Produced	Free Res. Elect at \$ 0.123 kWh	Free Elect x 25 Years
Grid Tied	\$41,928,683	\$1.50	5,000	\$7,500	5,590	27,952,455	27,952	44,723,929	45	\$5,501,043	\$137,526,080
Off Grid	\$489,904	\$1.50	5,000	\$7,500	65	326,603	327	522,564	1	\$64,275	\$1,606,885
Total:	\$42,418,587				5,656	28,279,058	28,279	45,246,493	45	\$5,565,319	\$139,132,965

Non-Residential 2011 RES Budget	Incentive Budget	UFI	Cap Watts	Total	# Systems	Total Watts Installed	kW Installed	Total kWh at 1,600 kWh Per System	MWh Produced	Free Non-Res. Elect at \$ 0.064 kWh	Free Elect x 25 Years
Grid Tied	\$192,829,500	\$1.50	100,000	\$150,000	1,286	128,553,000	128,553	205,684,800	206	\$13,163,827	\$329,095,680
Off Grid	\$838,389	\$1.50	100,000	\$150,000	6	558,926	559	894,282	1	\$57,234	\$1,430,851
Total:	\$193,667,889				1,291	129,111,926	129,112	206,579,082	207	\$13,221,061	\$330,526,531

Incentive Budget	Total Watts Installed	kW Installed	Total kWh at 1,600 kWh Per System	MWh Produced	Combined Free Electricity 2011	Combined Free Elect x 25 Years
\$236,086,476	157,390,984	157,391	251,825,574	252	\$18,786,380	\$469,659,496

Incentive Budget	Total Watts Installed	kW Installed	Total kWh at 1,600 kWh Per System	MWh Produced	Free Elect x 25 Years x 15 Years of Investment
\$3,541,297,140	2,360,864,760	2,360,865	3,777,383,616	3,777	\$7,044,892,439

APS 2011 REST Plan - Exhibit C

Arizona Economic Stimulus through Solar Panel Sales, Solar Permits, Jobs, Salaries and Installed Revenue

Penetration	1.88%
City Permit Fee	\$300
Solar Array Watts	5,000
Panel Wattage	200
Panels Per Job	25
Install Cost/Watt	\$4.50
Install Revenue	\$22,500
Fed Tax Incentive	-\$6,750
State Tax Incentive	-\$1,000
Utility Rebate	-\$7,500
Customer Cost:	\$7,250

Panels/Year	786,939
Panels/Job	25
Installs Needed	31,478

Co. Installs/Yr.	60
Co.'s Needed	525
Company Size	10
Jobs Created	5,246
Average Salary	\$35,000
Salaries Created	\$183,619,016

City	Population	Homes	Density	Penetration	Solar Installs	City Permits	Installed Panels	Installed Revenue
Phoenix	1,567,924	495,793	1,044	1.88%	9,296	\$2,788,836	232,403	\$209,162,672
Tucson	541,811	209,792	1,078	1.88%	3,934	\$1,180,080	98,340	\$88,506,000
Mesa	463,552	175,717	1,406	1.88%	3,295	\$988,408	82,367	\$74,130,609
Scottsdale	235,371	104,949	570	1.88%	1,968	\$590,338	49,195	\$44,275,359
Glendale	251,522	79,645	1,430	1.88%	1,493	\$448,003	37,334	\$33,600,234
Tempe	175,523	67,008	1,673	1.88%	1,256	\$376,920	31,410	\$28,269,000
Chandler	247,140	66,634	1,151	1.88%	1,249	\$374,816	31,235	\$28,111,219
Peoria	157,960	42,669	309	1.88%	800	\$240,013	20,001	\$18,000,984
Alhambra	136,197	38,913	1,000	1.88%	730	\$218,888	18,241	\$16,416,603
Gilbert	216,449	37,052	863	1.88%	695	\$208,418	17,368	\$15,631,313
Yuma	90,041	35,046	329	1.88%	657	\$197,134	16,428	\$14,785,031
Sun City	38,112	27,584	1,901	1.88%	517	\$155,160	12,930	\$11,637,000
Lake Havasu City	56,553	22,991	534	1.88%	431	\$129,324	10,777	\$9,699,328
Apache Junction	32,776	22,781	665	1.88%	427	\$128,143	10,679	\$9,610,734
Flagstaff	60,222	21,430	337	1.88%	402	\$120,544	10,045	\$9,040,781
Bullhead City	40,868	18,410	407	1.88%	345	\$103,556	8,630	\$7,766,719
Prescott	42,697	17,431	470	1.88%	327	\$98,049	8,171	\$7,353,703
Sun City West	26,222	17,267	1,556	1.88%	324	\$97,127	8,094	\$7,284,516
Surprise	92,897	16,307	235	1.88%	306	\$91,727	7,644	\$6,879,516
Sierra Vista	43,320	15,621	102	1.88%	293	\$87,868	7,322	\$6,590,109
Green Valley	16,171	13,241	505	1.88%	248	\$74,481	6,207	\$5,586,047

APS 2011 REST Plan - Exhibit C

Arizona Economic Stimulus through Solar Panel Sales, Solar Permits, Jobs, Salaries and Installed Revenue

Avondale	81,299	11,412	277	1.88%	214	\$64,193	5,349	\$4,814,438
Casa Grande	41,152	10,936	227	1.88%	205	\$61,515	5,126	\$4,613,625
Fountain Hills	25,227	10,498	578	1.88%	197	\$59,051	4,921	\$4,428,844
Golden Valley	4,587	2,220	79	1.88%	42	\$12,488	1,041	\$936,563
Cave Creek	5,428	1,779	63	1.88%	33	\$10,007	834	\$750,516
Youngtown	4,896	1,769	1,349	1.88%	33	\$9,951	829	\$746,297
Litchfield Park	5,126	1,631	521	1.88%	31	\$9,174	765	\$688,078
Tolleson	7,199	1,482	266	1.88%	28	\$8,336	695	\$625,219
Cornville	3,572	1,467	111	1.88%	28	\$8,252	688	\$618,891
Queen Creek	3,551	1,306	51	1.88%	24	\$7,346	612	\$550,969
Sahuarita	2,412	1,242	82	1.88%	23	\$6,986	582	\$523,969
Huachuca City	1,963	852	701	1.88%	16	\$4,793	399	\$359,438
Vail	2,164	847	47	1.88%	16	\$4,764	397	\$357,328
Maricopa	1,080	286	71	1.88%	5	\$1,609	134	\$120,656
	5,038,556	1,678,802			31,478	\$9,443,264	786,939	\$708,244,775

Revenue thru 2025 (15 Years): \$10,623,671,618