BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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Rulemaking 08-03-008
(Files March 13, 2008)

Order instituting Rulemaking regarding Policies, Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program And Other Distributed Issues.

COMMENTS OF UTC POWER CORPORATION REGARDING THE IMPLEMENTATION OF SENATE BILL 412 – REPLY COMMENTS

Michael O. Brown
Vice President Government Affairs and General Counsel
UTC Power Corporation
195 Governor's Highway
South Windsor, CT 06074
Phone: 860 727 7905
Fax: 860 660 8360

Dated: January 19, 2010

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REPLY COMMENTS OF UTC POWER CORPORATION REGARDING THE IMPLEMENTATION OF SENATE BILL 412

I. Introduction

UTC Power Corporation ("UTCP") appreciates the opportunity to provide reply comments from our participation in the California Public Utility Commission's ("Commission") Public Hearing ("Hearing") held on January 7, 2010. As a key provider of fuel cells to the California market, UTCP looks forward to working with the Commission to address the requirements of SB 412.

At the Public Hearing, an assessment of the projects funded by the SGIP was presented by Itron.[1] Itron looked at systems installed and operated during the period of 2001- 2008. For installations operated in 2008, as compared to other technologies implemented, Itron concluded that fuel cells are the only technology that meets SGIP efficiency requirements, have the second best capacity factor, and have the greatest amount of CO_2 avoided, on an absolute and normalized basis.

II. SGIP Efficiency Requirements

[1] *SB 412 Workshop*, PowerPoint presentation, Itron 1/7/10.

UTCP manufactures phosphoric acid fuel cells (PAFCs). PAFCs have high system efficiencies, not just in theory but in practice. To meet the efficiency requirements for SGIP, the system must meet a minimum of 40 percent electrical efficiency (HHV). The UTCP Model 400 fuel cell has an initial electrical efficiency of 42 percent (HHV).

SGIP allows an option to meet efficiency requirements by considering total system efficiency. The threshold is 42.5 percent with a combination of electrical and thermal efficiencies and a minimum thermal use of 5 percent. The UTCP installations typically meet these levels as well. Although PUC 216.6 (a) only requires a minimum of 5 percent of the total recovered heat, the large majority of UTC PAFC installed far exceed this. This is because project economics are such that a good use of the useful thermal energy is necessary to make the projects financially viable for our customers. Therefore, our customer projects typically provide a significant margin to the PUC 216.6 (b) requirement of 42.5 percent.

Although many of our projects exceed 60 percent overall system efficiencies, Assembly Bill 1685 (Leno, October 12, 2003) is only applicable to combustion-based combined heat and power (CHP), which is not applicable to fuel cells. Table 1 shows two UTCP customer projects that demonstrate high overall system efficiencies.

Table 1 – UTCP Fuel Cell Installations Showing High System Efficiencies

Project	Capacity	Capacity Factor	PURPA Efficiency (LHV)	Overall System Efficiency (HHV)
Mohegan Sun* Uncasville, CT	0.4 MW	96%	63%	76%
Verizon** Garden City, NY	1.4 MW	88%	53%	60%

* Year 1 of operation
** Year 2 of operation

In conclusion, based on the data presented by Itron on efficiency, fuel cells are the only technology that has consistently demonstrated compliance to SGIP minimum efficiency requirements. Many of the UTCP installations far exceed these requirements.

III. Capacity Factor

Capacity factor of distributed energy (DE) units are important to California, especially in the summer months, because they can relieve the peak burden of the "grid" and reduce criteria pollutants and greenhouse gases from power plants. Itron's report acknowledged that gas turbines and fuel cells typically operate at facility base load and therefore have the highest capacity factors among DE. Itron displayed data for CAISO Peak Hour Impact (2002-2008), and for 2008 the capacity factor for gas turbines was about 0.85 kW (peak) per kW (rebated), and about 0.65 for fuel cells. These were the averages for all projects for the respective technologies regardless of manufacturer.

UTCP has 97 fuel cells currently in operation around the world. The excellent performance of our customers' systems is a combination of mature design and robust field service. The PAFC has over 20 years of operating experience and the UTC Power fleet has attained over 9 million operating hours. Through its Remote Monitoring

System (RMS), UTCP is able to track operating data for all fuel cells covered under a UTCP service agreement. The RMS and our network of local service technicians enable failure prediction, remote intervention and quick field response when needed. These result in minimal downtime and maximum capacity factor.

There are four UTCP fuel cells currently operating in California. The average capacity factor for this fleet in 2009 was 0.81. Table 2 summarizes this data.

Table 2 – Capacity Factor for UTCP Fuel Cells in CA, 2009 Operating Data

Project	Capacity	Electrical Output* (MWh)	Capacity Factor
Anaheim Police Department Anaheim, CA	0.2 MW	1479	84%
Chevron Energy Solutions San Ramon, CA	0.2 MW	1326	76%
Fujitsu Sunnyvale, CA	0.2 MW	1676	96%
National Guard – Camp Roberts Los Alamitos, CA	0.2 MW	1164	66%
		Average	**81%**

* Thermal data not available

In conclusion, taking into consideration the performance of the worldwide fleet of UTCP PAFCs, the capacity factor of our California customers' fuel cells is 0.81 and is on par with the average capacity factor for gas turbines. A capacity factor of this magnitude will increase the likelihood that power is being generated during peak demand periods and therefore avoid the greatest amount of pollution as compared to other DE technologies.

IV. Greenhouse Gas Emission Impacts

SB 412 has a distinct focus on greenhouse gases reductions. Section 379.6 (b) of the Public Utilities Code reads as follows:

> Eligibility for incentives under the program shall be limited to distributed energy resources that the Commission, in consultation with the State Air Resources Board, determines will achieve reductions of greenhouse gas emissions pursuant to the California Warming Solutions Act of 2006.

In Itron's analysis of CHP sources operating on non-renewable fuel, fuel cells achieved the greatest overall reduction of CO_{2eq} of about 6,000 tons. The next closest was gas turbines of about 5,000 tons. However, when looking at these reductions on a normalized basis the difference is significantly greater. Using the Itron data, fuel cells operating on non-renewable fuel generated 44,050 MWh and therefore avoided CO_{2eq} on a normalized basis of 280 lbs/ MWh. Gas turbines operating on non-renewable fuel generated 114,156 MWh and therefore avoided CO_{2eq} of 84 lbs/ MWh.

Table 3 – CO_{2eq} Avoided by Fuel Cells and Gas Turbines, 2008 Data, Itron

Technology	Energy Produced	CO_{2eq} Avoided (Absolute)	CO_{2eq} Avoided (Normalized)
Fuel Cells	44,050 MWh	5968 tons	280 lbs/ MWh
Gas Turbines	114,156 MWh	4796 tons	84 lbs/ MWh

In conclusion, of all the DE technologies that operate on non-renewable fuels, fuel cells have the greatest CO_{2eq} avoided by a significant margin.

V. Incentive Levels and Pay for Performance Recommendations

The Commission may consider public policy interests, including but not limited to ratepayers, energy efficiency, peak load reduction, load management and

environmental interests. Based on the data presented by Itron, fuel cell technologies provide the greatest advantage in capacity factor, meeting efficiency standards and greenhouse gas avoidance, which supports many of the policy interests most important to the public. Therefore, UTCP recommends that the existing incentive levels for fuel cells on non renewable and renewable fuel remain the same at least until the end of 2012.

However, UTCP recognizes the desire on the part of the Commission and public advocacy groups to ensure systems funded by the SGIP meet the requirements of the program.

To ensure performance, UTCP recommends that 25 percent of the incentive be held back and paid to the applicant in accordance with the performance of the system. Under this proposal, the applicant would choose any 12-month period within 24 months of receipt of the incentive claim form (called the “Evaluation Period”). During this period, the technology-specific efficiency requirement must be met. If it is not met, then the remaining 25 percent of the incentive shall be forfeited. If it is met, the project is eligible for up to 150 percent of the remaining incentive according to the capacity factor performance. Table 4 summarizes UTCP’s recommendations on performance payout levels.

Table 4 – Performance Payout Level Recommendations

12-Month Capacity Factor Performance	Payout of Incentive Hold Back (only after meeting technology-specific SGIP efficiency requirement)
<0.40	0
0.40-0.49	50%
0.50-0.59	75%
0.60-0.69	100%
0.70-0.79	125%
>=0.80	150%

Example: California customer applies for SGIP funding for one 400kW fuel cell operating on non-renewable fuel. The project is eligible for $1M (400kW X $2500/kW); however, only $750,000 is paid upon Program Administrator receipt of incentive claim form and documents. The remaining $250,000 is held back and the payout is subject to demonstration of system performance. To demonstrate performance, the customer can choose any consecutive 12-month period ("Evaluation Period") over the next 24 months (from receipt of claim form).

The first parameter to be assessed is efficiency. In the case of a fuel cell, if it achieves 40 percent electrical efficiency (HHV) or 42.5 percent PURPA efficiency; the customer is eligible for the $250,000 hold back. [Note: If the prime mover is a combustion device, the efficiency requirement is 60 percent.]

The specific amount of the final payback is determined based on the capacity factor performance. If the capacity factor is 0.55, then 75% or $187,500 (=0.75 X $250,000) is paid out. And if the capacity factor is 0.75, then 125% or $312,500 (=1.25 X $250,000) is paid out.

If there are extenuating circumstances where the Evaluation Period must go beyond the 24-month performance window, the customer can make a written request to the Program Administrator for an extension. Further, UTCP recommends that this Pay for Performance feature be phased in over a period of time. This is to ensure that projects that have progressed in the sales process are not abruptly stopped or delayed. UTCP recommends a phase in period of 12 months from Commission approval.

VI. Conclusion

The data presented by Itron clearly points to the importance of having DE systems that perform according to the rules of the SGIP. If the DE systems do not achieve the minimum efficiency requirements, they will not achieve improved greenhouse gas performance as compared to the electric grid. Therefore, it is critical that this be the primary screen to determine final payout of SGIP incentives.

The data Itron presented on the correlation between greenhouse emissions and the electric grid load curve is compelling. It supports the importance of a high capacity factor to not only reduce peak electrical demand, but greenhouse gas emissions. DE that operates at the required efficiency for more hours of the year should be rewarded with higher performance payouts due to the higher public benefits.

The Pay for Performance aspect of the SGIP program will ensure DE sites are selected more judiciously, thermal energy use maximized and systems operated and maintained to ensure minimal downtime.

Dated: January 19, 2010

Respectfully submitted,

By:_____/s/_____

MICHAEL O. BROWN
VP BUSINESS DEVELOP AND GEN COUNSEL
UTC POWER CORPORATION
195 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

PROOF OF SERVICE

I declare that:

I am employed in the County of Sacramento, State of California. I am over the age of eighteen years and am not a party to the within action. My business address is LUCAS ADVOCATES; 1414 K Street, Suite 220; Sacramento, California 95814; telephone (916) 444-7337.

On January 21, 2010, I served the attached *Reply Comments of UTC Power Corporation* by electronic mail or, if no e-mail address was provided, by United States mail at Sacramento, California, addressed to each person shown on the attached service list.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on January 22, 2010, at Sacramento, California.

/s/
Robert W. Lucas

Service List
R.08-03-008

abb@eslawfirm.com
abrowning@votesolar.org
aes@cpuc.ca.gov
akbar.jazayeri@sce.com
allenseligson@yahoo.com
amber@iepa.com
andre.devilbiss@recurrentenergy.com
andrew.mcallister@energycenter.org
annette.gilliam@sce.com
arr@cpuc.ca.gov
artrivera@comcast.net
as2@cpuc.ca.gov
asteele@hanmor.com
atrowbridge@daycartermurphy.com
AXY4@pge.com
bawilkins@sbcglobal.net
bbaker@summitblue.com
bbarkett@summitblue.com
bchao@simmonsco-intl.com
bcragg@goodinmacbride.com
bdille@jmpsecurities.com
ben@solarcity.com
benjamin.airth@energycenter.org
bernardo@braunlegal.com
bill@brobecksolarenergy.com
bjeider@ci.burbank.ca.us
bkarney@comcast.net
blaising@braunlegal.com
bob.ramirez@itron.com
brbarkovich@earthlink.net
brenda.latter@itron.com
C2M1@pge.com
CABe@pge.com
case.admin@sce.com
cbeebe@enovity.com
cec@cpuc.ca.gov
cem@newsdata.com
CentralFiles@semprautilities.com
chuck.hornbrook@itron.com
chuck@csolt.net
cjm@cpuc.ca.gov
CJSv@pge.com
clamasbabbini@comverge.com
cln@cpuc.ca.gov
cmanson@semprautilities.com
colin@tiogaenergy.com
cp@kacosolar.com
cpucdockets@keyesandfox.com
croaman@ccsf.edu
css@cpuc.ca.gov
ctai@edgetechsolar.com
ctoca@utility-savings.com
dakinports@semprautilities.com
dalbers@americandairyparks.com
dan@energysmarthomes.net
david.eaglefan@gmail.com
dbp@cpuc.ca.gov
dbruder@onsitenergy.com
dcarroll@downeybrand.com
dchong@energy.state.ca.us
deden@energy.state.ca.us
dennis@ddecuir.com
df1@cpuc.ca.gov
dgrandy@caonsitegen.com
dhaines@environmentalpower.com
dm1@cpuc.ca.gov
dmcfeely@solartech.org
dot@cpuc.ca.gov
doug.white@energycenter.org
dseperas@calpine.com
dtf@cpuc.ca.gov
dvidaver@energy.state.ca.us
ebrodeur@steadfastcompanies.com
ecarlson@solarcity.com
EGrizard@deweysquare.com
EGuise@NationalEnergySolutionsLLC.co

m
ek@a-klaw.com
eklinkner@cityofpasadena.net
elee@davisenergy.com
elee@sandiego.gov
elvine@lbl.gov
emackie@gridalternatives.org
emahlon@ecoact.org
ensmith@mwe.com
eric@harpiris.com
erickpetersen@pvpowered.com
Eriks@ecoplexus.com
filings@a-klaw.com
fmazanec@biofuelsenergyllc.com
fortlieb@sandiego.gov
fsmith@sfwater.org
fwmonier@tid.org
G1GK@pge.com
george.simons@itron.com
ghilberg@tas.com
gilligan06@gmail.com
gjs8@att.net
gjs8@att.net
glw@eslawfirm.com
gmorris@emf.net
gopal@recolteenergy.com
grant.kolling@cityofpaloalto.org
gteigen@rcmdigesters.com
hank@wasteheatsol.com
heidi@sunlightandpower.com
hesusman@stoel.com
hhh4@pge.com
hodgesjl@surewest.net
HYao@SempraUtilities.com
info@calseia.org
irene.stillings@energycenter.org
j2t7@pge-corp.com
jamckinsey@stoel.com
janet.gagnon@solarworld-usa.com
jarmstrong@goodinmacbride.com
jason.jones@tiltsolar.com
jbarnes@summitblue.com
jbarnet@smud.org
jeanne.sole@sfgov.org
jennifer.porter@energycenter.org
JerryL@abag.ca.gov
jf2@cpuc.ca.gov
jharris@volkerlaw.com
jholmes@emi1.com
jim.howell@recurrentenergy.com
jimross@r-c-s-inc.com
jjg@eslawfirm.com
jkarp@winston.com
jlarkin@us.kema.com
jlin@strategen.com
jmaskrey@sopogy.com
jmcfarland@treasurer.ca.gov
JMCLA@comcast.net
jmgarber@iid.com
jna@speakeasy.org
joc@cpuc.ca.gov
jody_london_consulting@earthlink.net
joelene.monestier@spgsolar.com
john@proctoreng.com
Johng@ecoplexus.com
jon.bonk-vasko@energycenter.org
jordan@tiogaenergy.com
jpalmer@solarcity.com
jrathke@capstoneturbine.com
jrichman@bloomenergy.com
jrohrbach@rrienergy.com
jtengco@akeena.com
julia@jasenergies.com
julie.blunden@sunpowercorp.com
justin@sunwatersolar.com
jwwd@pge.com
jyamagata@semprautilities.com
kar@cpuc.ca.gov
karen@klindh.com
karin.corfee@kema.com
katie@sunlightandpower.com
katrina.perez@energycenter.org
katrina.phruksukarn@energycenter.org
kbest@realenergy.com
kcooney@summitblue.com
kdzienkowski@pvtsolar.com

kellie.smith@sen.ca.gov
kenneth.swain@navigantconsulting.com
kfox@keyesandfox.com
kirby.bosley@jpmorgan.com
kirk@NoElectricBill.com
kmerrill@energy-solution.com
Kurt.Scheuermann@itron.com
kxn8@pge.com
lauren@sunlightandpower.com
laurene_park@sbcglobal.net
lglover@solidsolar.com
liddell@energyattorney.com
linda.forsberg@mountainview.gov
lmerry@vervesolar.com
lmh@eslawfirm.com
lnelson@westernrenewables.com
loe@cpuc.ca.gov
lp1@cpuc.ca.gov
LPaskett@Firstsolar.com
lrosen@eesolar.com
lwhouse@innercite.com
m.stout@cleantechamerica.com
marcel@turn.org
martinhomec@gmail.com
mary.tucker@sanjoseca.gov
matt@criterionmgt.com
matt@sustainablespaces.com
matthew.kilkenny@skywatchenergy.com
mc3@cpuc.ca.gov
mcampbell@opiniondynamics.com
mdavis@barnumcelillo.com
mday@goodinmacbride.com
mdd@cpuc.ca.gov
mdorn@mwe.com
mdoughto@energy.state.ca.us
meb@cpuc.ca.gov
megan@nonprofithousing.org
mgh9@pge.com
Michael.Brown@utcpower.com
michael.hindus@pillsburylaw.com
michael.mcdonald@ieee.org
michael@awish.net
michaelkyes@sbcglobal.net
mike.montoya@sce.com
mike@ethree.com
mkober@pyramidsolar.com
mowrysswr@cox.net
mpa@a-klaw.com
mrw@mrwassoc.com
MtenEyck@ci.rancho-cucamonga.ca.us
mts@cpuc.ca.gov
mvc@cpuc.ca.gov
mxw8@pge.com
myuffee@mwe.com
nellie.tong@us.kema.com
nes@a-klaw.com
nick.chaset@tesserasolar.com
njfolly@tid.org
NJSa@pge.com
nlong@nrdc.org
nmr@cpuc.ca.gov
npedersen@hanmor.com
Olivia.puerta@mountainview.gov
Paige.Brokaw@asm.ca.gov
Paul.Tramonte@jpmorgan.com
paul@tiogaenergy.com
pbarthol@energy.state.ca.us
pepper@sunfundcorp.com
peter.thompson@solar.abengoa.com
phammond@simmonsco-intl.com
pnarvand@energy.state.ca.us
preston@sonomaenergymgt.com
psaxton@energy.state.ca.us
pstoner@lgc.org
r.raushenbush@comcast.net
rbaybayan@energy.state.ca.us
regrelcpuccases@pge.com
rguild@solarcity.com
rhuang@smud.org
rhwiser@lbl.gov
rick.ruiz@zenviro.net
rishii@aesc-inc.com
rjl9@pge.com
RKC0@pge.com
rknight@bki.com
rl4@cpuc.ca.gov

rmccann@umich.edu
robert.pettinato@ladwp.com
robert.tierney@utcpower.com
ronnie@energyrecommerce.com
rsantos@guardian.com
rsiada@guardian.com
rsperberg@onsitenergy.com
ryan.amador@energycenter.org
rzhang@cityofpasadena.net
sa@zeropex.com
sara@solaralliance.org
sas@a-klaw.com
sbarata@opiniondynamics.com
sbeserra@sbcglobal.net
sco@cpuc.ca.gov
scott@debenhamenergy.com
sdhilton@stoel.com
sebesq@comcast.net
sendo@ci.pasadena.ca.us
sephra.ninow@energycenter.org
sewayland@comcast.net
sfrantz@smud.org
SGraham@navigantconsulting.com
sgreschner@gridalternatives.org
Shoeless838@comcast.net
skg@cpuc.ca.gov
smiller@energy.state.ca.us
smita.gupta@itron.com
socal.forum@yahoo.com
spatrick@sempra.com
spauker@wsgr.com
srt@cpuc.ca.gov
ssciortino@anaheim.net
ssmyers@att.net
stacey.reineccius@powergetics.com
steven.huhman@morganstanley.com
steven@moss.net
susan.munves@smgov.net
susanne@emersonenvironmental.com
sww9@pge.com
tam.hunt@gmail.com
tam.hunt@gmail.com
taram@greenlining.org
tbardacke@globalgreen.org
tblair@sandiego.gov
tcr@cpuc.ca.gov
tdfeder@lbl.gov
terry.clapham@energycenter.org
terry.mohn@baesystems.com
thamilton@icfi.com
tim_merrigan@nrel.gov
tomb@crossborderenergy.com
ttutt@smud.org
tzentai@summitblue.com
unc@cpuc.ca.gov
walter.gordon@sce.com
warehouse@mohrpower.com
whughes@smud.org
will@solarroofs.com
wlscott@earthlink.net
wmb@cpuc.ca.gov
WPark@FIRSTSOLAR.COM
zfranklin@gridalternatives.org