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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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

Rulemaking 10-05-004
(Filed May 6, 2010)

**ADMINISTRATIVE LAW JUDGE'S RULING REQUESTING COMMENTS ON
REVISED STAFF PROPOSAL REGARDING MODIFICATIONS TO
THE SELF-GENERATION INCENTIVE PROGRAM**

1. Summary

This ruling requests comments from interested stakeholders on a revised proposal by Staff of the Commission's Energy Division (Staff Proposal, Part II) regarding modifications to the Self-Generation Incentive Program.

2. Background

Senate Bill (SB) 412 (Stats. 2009, ch. 182) authorizes the Commission, in consultation with the California Air Resources Board, to determine what technologies should be eligible for Self-Generation Incentive Program (SGIP) based on greenhouse gas emissions reductions. SB 412 also extends the sunset date of the SGIP from January 1, 2012 to January 1, 2016.

An Administrative Law Judge (ALJ) Ruling issued on September 30, 2010, requested comments from parties on a proposal by the Energy Division staff to modify the SGIP per SB 412 (Staff Proposal). The Staff Proposal and the ALJ Ruling noted that Energy Division intends to update certain portions of the Staff Proposal in response to information expected in the future. Specifically, staff

noted that a consultant's cost-effectiveness analysis was underway based on the methodology approved in Decision 09-08-026 and that staff's recommendations with respect to cost-effectiveness in the Staff Proposal would be revisited after the completion of the cost-effectiveness report to incorporate the results of the final cost-effectiveness study. The consultant's (Itron, Inc.) cost-effectiveness report is now finalized and the Energy Division staff has revised its recommendations. The revised Staff Proposal (Staff Proposal, Part II) is attached to this ruling as Attachment A. In order to ensure a full and complete record, Itron, Inc.'s cost-effectiveness report which was supplied to Energy Division, but never formally filed at the Commission, should now be admitted as evidence in this proceeding. Because of the length of Itron, Inc.'s report, a copy is not attached to this ruling, but a hard copy will be retained in the Commission's Central Files Office.¹

Parties are requested to file comments on Staff Proposal, Part II no later than May 2, 2011. Parties may file reply comments no later than May 9, 2011. Comments shall be limited to 10 pages and shall address only the issues in the Staff Proposal, Part II. Reply comments shall be limited to five pages. Comments on SGIP issues not discussed in the revised Staff Proposal will be accorded no weight and are not to be filed. In addition, parties' comments should refer to the section numbers in Staff Proposal, Part II to facilitate review of the comments.

¹ Itron, Inc.'s Cost-Effectiveness Report can be found at the following website:
http://www.cpuc.ca.gov/PUC/energy/DistGen/sgip/proposal_workshops.htm.

ATTACHMENT A
Self Generation Incentive Program (SGIP)
Staff Proposal, Part II

1. Introduction

The purpose of this Energy Division Staff Proposal is to recommend modifications to the Self Generation Incentive Program (SGIP). This SGIP Staff Proposal is Part II. An initial Staff Proposal (Part I) was released in September 2010.

This SGIP Staff Proposal “Part II” presents a range of recommendations primarily based on review of the SGIP Program’s cost-effectiveness, as well as historical SGIP data and other publicly available information on distributed energy resource (DER) technologies.

1.1 Background

This SGIP program modification process was initiated in response to Senate Bill (SB) 412 (Stats. 2009, ch. 182), which authorizes the Commission, in consultation with the State Air Resources Board (ARB), to determine which distributed energy resources (DER) can be eligible for SGIP based on greenhouse gas (GHG) emissions reductions. The GHG requirement, added via SB 412, complements the historical SGIP goal of peak load reduction. Prior to SB 412, the SGIP program already had existing requirements governing NO_x and other criteria pollutants that regulated the technologies eligible for incentives through the SGIP program.

The SGIP Staff Proposal, Part I, was released on September 30, 2010 in Rulemaking (R.) 10-05-004. Staff hosted a workshop on November 1, 2010 to solicit feedback from parties – who were also given an opportunity to file formal comments on how to modify the SGIP program. Opening and reply comments were filed by parties in December 2010.

On February 4, 2011 Itron, Inc. submitted their SGIP Cost-Effectiveness of Distributed Generation Technologies report, as well as their SGIP Cost

Effectiveness Model (SGIPce) and findings to the Commission.¹ The Itron, Inc. SGIP Cost Effectiveness report was useful in preparing the SGIP Staff Proposal, Part II. Itron, Inc.'s SGIP Cost Effectiveness Report was completed under the direction of the CPUC Energy Division staff and funded by the SGIP Program's evaluation budget. The Itron, Inc. Cost-Effectiveness report on SGIP followed the CPUC's adopted methodology for distributed generation (DG) Cost-Effectiveness, which was established in D.09-08-026. Staff posted the report to the CPUC website and sent a notice to the service list for R.10-05-004.

This SGIP Staff Proposal, Part II presents recommendations on areas of program modification that were not previously presented in Part I. The issues discussed in the SGIP Staff Proposal, Part I have already been commented on by parties. This SGIP Staff Proposal, Part II focuses on eligible technologies and recommended incentive levels by technology.

The recommendations herein are subject to public comment, and this proposal does not represent a final decision of the Commission.

2. Technology Eligibility

The SGIP Staff Proposal, Part I recommended the Commission adopt three screens for SGIP eligibility: GHG reductions, cost-effectiveness, and need for financial incentives. While the use of the three screens was recommended, staff only assessed eligibility using the GHG screen because the Commission had not yet received the results of the Cost-Effectiveness Report. Staff continues to recommend that, in addition to the GHG screen, the cost-effectiveness screen be applied to determine eligibility.

However, staff now proposes that the third screen recommended in SGIP Staff Proposal, Part I -- the need for financial incentives -- be used as an aid in setting incentive levels, but not as a binary pass/fail screen. Staff recognizes that the financial performance of a technology varies by many factors and -- it is not possible to set a single statewide screen that determines on a pass/fail basis whether a technology should be in the program. Instead, staff chose to include financial performance data as a factor for setting the incentive levels.

¹ The complete SGIP Cost-Effectiveness of Distributed Generation Technologies Final Report and Model is available here: http://www.cpuc.ca.gov/PUC/energy/DistGen/sgip/proposal_workshops.htm.

Despite the uncertainties discussed below, staff recommends the Commission focus on these two critical factors in establishing upfront SGIP technology eligibility and incentive levels.

2.1 GHG Reduction Screen

To be eligible for inclusion in SGIP, technologies must show GHG reductions. Staff already presented the findings of the GHG screen in the SGIP Staff Proposal, Part I. The findings are included herein again, without modification – *only* to show the screens working in conjunction with one another.

2.2 Cost-Effectiveness of Distributed Energy Resources (DER) Screen

After reviewing the Cost-Effectiveness Report, staff chose to slightly modify the application of the cost-effectiveness screen.² This screen is intended to help ensure that SGIP funds projects that benefit society as a whole.

The SGIP Cost-Effectiveness analysis (Itron, Inc., February 2011) examined both current and future cost-effectiveness from the societal and participant perspectives. In the SGIP Staff Proposal Part I we recommended using the future cost-effectiveness results. However, the future cost-effectiveness results are considerably more uncertain because the projections rely on assumed cost-reduction curves which may change due to external factors or unforeseen events.

Therefore, to maximize the societal benefit of ratepayer funds, staff recommends that only technologies which show cost effectiveness on a total resource cost (TRC) basis in 2010 should be funded. For purposes of this analysis, technologies which show a TRC value of >1.0 in the Statewide Average 2010 Commercial Results will be deemed “cost-effective” and pass the TRC screen.³ A technology

² The Itron, Inc. cost-effectiveness analysis used the societal total resource cost test based on the methodology established by the Commission in D.09-08-026.

³ Itron, Inc.’s SGIP Cost-Effectiveness of Distributed Generation Technologies Final Report, Page 5-3.

must pass both the GHG screen and the TRC screen to be recommended for inclusion in the SGIP program.

2.3 Recommended SGIP Technologies

Staff recommends that the Commission modify the SGIP program to offer incentives to technologies as indicated in the last column of Table 1. The table presents each proposed SGIP technology and fuel type, and then applies the first two screens identified above. This table only presents two fuel options “Natural Gas (NG)” and “Onsite Biogas (OSB).” There is a third fuel type - Directed Biogas, which is discussed in more detail in Section 2.4.3 below.

Table 1. Proposed and Recommended SGIP Technologies

Technology	Fuel⁴	GHG Reducing per SGIP Staff Proposal, Part I⁵	Total Resource Cost (TRC) Value⁶	Include in SGIP?
Wind	n/a	Yes	1.40	Yes
Electric Only Fuel Cell	NG	Yes ⁷	0.92	No
Electric Only Fuel Cell	OSB	Yes ⁷	0.87	No
Fuel Cell – CHP	NG	Yes	1.05	Yes
Fuel Cell – CHP	OSB	Yes	1.02	Yes
Gas Turbine (<3.5MW) – CHP	NG	Yes	0.89	No
Gas Turbine (<3.5MW) – CHP	OSB	Yes	0.89	No

⁴ Fuel refers to NG = Natural Gas, or OSB = Onsite Biogas. Please also see the fuel footnote on Table 2 which recommends other onsite renewable fuel be eligible whenever OSB would be eligible.

⁵ The GHG Reducing Yes/No results are drawn from the SGIP Staff Proposal, Part I, Appendix A, Table 2.

⁶ Greater than 1 = Pass, and Less than 1 = Fail. TRC scores based on statewide average of commercial customers in year 2010 (See Itron, Inc.’s Cost-Effectiveness of Distributed Generation Technologies Final Report, Page 5-3).

⁷ Efficiency data only available from one manufacturer’s (Bloom’s ES 5000) specification sheet, which has a manufacturer reported fuel input requirement of 0.661 MMBTU/hour and an output of 100 kW. This value has a corresponding higher heating value (HHV) efficiency of 51.6%. These values would need to be tested by a third party to ensure that heating value (and thus efficiency) claims can be verified to ensure GHG reductions occur from this technology.

Gas Turbine (>3.5MW) – CHP	NG	Yes	1.11	Yes
Gas Turbine (>3.5MW) – CHP	OSB	Yes	1.18	Yes
Microturbine – CHP	NG	No	1.06	No
Microturbine – CHP	OSB	Yes	1.25	Yes
IC Engine (0.5MW) – CHP	NG	No ⁸	1.23	No
IC Engine (0.5MW) – CHP	OSB	Yes	1.83	Yes
IC Engine (1.5MW) – CHP	NG	No ⁸	1.31	No
IC Engine (1.5MW) – CHP	OSB	Yes	1.51	Yes
Organic Rankine Cycle	n/a	Yes	1.54	Yes
Pressure Reduction Turbine ⁹	n/a	Yes	n/a	Yes

2.4 Technology-Specific Considerations for SGIP Eligibility

2.4.1 Advanced energy storage (AES) systems

AES systems coupled with intermittent clean DG (e.g., wind) show synergistic effects as demonstrated in recent SGIP program activity. Staff notes that on a stand-alone basis AES did not show positive TRC results, though it may reduce peak demand and GHGs. Staff continues to support the inclusion of emerging AES coupled with eligible generation. AES coupled with DG was not modeled in Itron, Inc.'s Cost-Effectiveness report.

Stand-alone AES was not recommended for inclusion in the SGIP program in SGIP Staff Proposal Part I. Staff notes here that stand-alone AES was modeled in Itron, Inc.'s Cost-Effectiveness Report and the TRC results were very low for the technology.¹⁰ As previously stated in Staff Proposal Part I, staff recognizes that energy storage plays an important role in achieving statewide energy goals, but reiterates that stand-alone AES may be more appropriately considered in the Permanent Load Shifting (R.07-01-041) or Storage (R.10-12-007) proceeding.

⁸ The SGIP Staff Proposal, Part I found that rich burn IC Engines are not GHG reducing but lean burn are GHG reducing.

⁹ See Section 2.4.2 below.

¹⁰ Stand alone AES had a Statewide 2010 TRC of 0.50 for medium storage and 0.55 for larger storage. (SGIP Cost-Effectiveness Report, p. 5-3.)

2.4.2 Pressure reduction turbines (PRT)

PRTs or in-conduit hydro is recommended for inclusion in the SGIP program. Despite the fact that PRTs were not included in Itron, Inc.'s Cost Effectiveness Report, and hence comprehensive TRC results are not available, staff notes that these technologies are consistent with the goals of the program. Staff notes that PRTs – which don't require fuel – do reduce GHGs and can also address peak load. Pressure reduction turbines are likely to be limited by site-specific characteristics more than financial hurdles, and their inclusion in SGIP with a very modest incentive should enable further deployment at sites well suited for PRT.

2.4.3 Onsite Biogas (OSB) and Directed Biogas (DBG) Fuel Considerations

Staff recommends that the Commission distinguish between OSB and DBG. In D.09-09-048, the Commission modified the SGIP program to allow DBG projects to qualify for renewable fuel incentives that were otherwise offered to OSB projects. OSB projects incur considerable costs to invest in biogas clean up and biogas handling. DBG projects are expected to incur a presumed price premium to purchase biogas and then transport (to deliver) biogas from one location to another location. Public information about DBG premiums is scarce.

Staff has reviewed the analyses on both OSB and DBG in the Itron, Inc. Cost-Effectiveness report. In numerous instances, Itron, Inc. found that DBG is more cost-effective from a societal perspective than OSB. Below, we examine a few assumptions in Itron, Inc.'s Cost-Effectiveness model that drive the projected societal benefits of projects using OSB and DBG:

- Itron, Inc.'s analysis assumes that OSB project sites over 1MW were already flaring their methane while sites under 1MW were venting their methane. California law requires flaring of methane at facilities which emit large volumes of methane. The net result in Itron, Inc.'s analysis is a lower TRC score for larger OSB projects than for smaller ones, as they have a cleaner baseline to begin with and show fewer additional GHG reductions as a result of installing clean DER compared with projects under 1MW. Staff recognizes that barriers to OSB exist and wishes to recommend SGIP continue to support onsite biogas projects (including facilities greater than 1MW) despite the fact that large OSB

- projects show smaller TRC benefits compared to small ones in Itron, Inc.'s analysis.
- Itron, Inc.'s analysis assumes that OSB projects offer fewer emission reduction benefits than out of state DBG sources because methane emissions in California are more heavily regulated than in many other states. Because out of state sources of biogenic methane are often vented, Itron, Inc.'s analysis shows that using DBG from out of state biogas sources reduces more GHGs relative to California onsite sources where they would be flared for compliance with air regulations. While this may be analytically correct, it is counter-intuitive for a State program to favor out of state DBG relative to in-state OSB simply because other states do not yet have California's level of air quality laws. Staff recognizes that barriers to OSB exist and recommends SGIP continue to support OSB projects despite the fact that out of state DBG projects show a larger TRC benefit in Itron, Inc.'s analysis.
 - Itron, Inc.'s analysis assumes that customers in DBG arrangements will use 100% renewable fuel for the 20 year life of the project. However, D.09-09-048 merely requires that DBG customers procure 75% renewable fuel and for only the first five years of operation. This requirement mirrored a pre-existing rule that OSB projects only had to supply 75% of their fuel resources with OSB since fuel availability matching can be challenging for OSB projects. It is likely that many, if not all, facilities receiving the additional incentive for using DBG will discontinue paying a premium for DBG past year five. Further, the SGIP program as designed pays the full SGIP incentive up front, and there is no reasonable mechanism to ensure that DBG continue to procure biogas even through the first five years. Staff expects that the renewable content of fuel over a 20 year DBG project life is likely to be 75% for five years and 0% for the remaining 15, for a lifetime content of less than 20% renewable fuel.

Due to these factors, Staff does not feel that DBG should be allowed for inclusion in the SGIP. This recommendation is reflected in the omission of DBG from Table 1 above.

If the Commission were to continue to allow DBG to qualify for incentives in SGIP, the quantity and timeline and verification issues of DBG must all be addressed in detail. In fact, due to the enormous opportunity for gaming and missed opportunity for environmental benefit, staff recommends that the Commission consider modifying the existing program requirements for the significant quantity of DBG projects that have already received incentive reservations in SGIP but have not yet completed their projects.¹¹ Staff notes that implementation of a verifiable DBG monitoring system is currently posing a challenge to SGIP Program Administrators. Paper contracts exist, but suppliers may store biogas for a long period of time before injecting it into the pipeline - which makes spot checks and other audit measures very difficult. The Commission could address these concerns by adopting the following changes for DBG projects that are not yet complete:

- (1) The 75% fuel requirement currently used in OSB applications was granted as a means to allow for flexibility due to factors such as variability of on-site methane production. However, customers signing contracts for nominated delivery of biogas are not subject to such complicating factors and should be required to enter into contract for 100% biogas.
- (2) DBG projects should be required to demonstrate a 10-year commitment to purchase DBG for 100% of the fuel requirements of the project. This, in combination with the 100% fuel requirement detailed above, could raise the renewable fuel content of a generator operating for 20 years to 50%.
- (3) To reduce the risks associated with 100% of the SGIP incentive being provided upfront to projects with existing

¹¹ Staff does not recommend reversing the granted program reservations; however, staff does recommend improving the program requirements to maximize ratepayer benefits from the already committed rebate reservations.

SGIP reservations, DBG projects should be subject to an audit and the utilities should be required to litigate for incentive refunds if the audit cannot find documentation of continued DBG purchase.¹²

3. SGIP Incentive Levels

Staff recommends the Commission adopt the SGIP incentive levels shown in Table 2, paid out in accordance with the performance-based incentive paradigm described in Section 4.4.3 of the SGIP Staff Proposal, Part I. A combination of the incentive levels and the recommended performance based incentive mechanism will ensure ratepayers maximize the benefits available from this program.

3.1 Need for Financial Incentives

SGIP incentives levels should provide sufficient payment to stimulate DER technologies and ensure some level of deployment. To maximize the amount of DER installed with limited SGIP funds, incentive levels should be set to make some projects viable, but there is insufficient funding to provide all technologies with adequate incentives to ensure a minimum level of a rate of return.

Itron, Inc.'s Cost Effectiveness Participant Cost Test analysis¹³ has shown that the financial performance of technologies varies widely from project to project and is influenced by utility territory, customer type, generator capacity, fuel type, and location. Itron, Inc.'s Cost Effectiveness Report shows a large range of payback times and Modified Internal Rate of Returns (MIRRs)¹⁴ for identical technologies and fuels.

¹² Under existing SGIP program practice, the utilities have little incentive to seek a refund from an SGIP project that has already received a rebate. The Commission recognized this risk in establishing the SGIP program and required that the SGIP Program Administrators submit to the CPUC Renewable Fuel Use Reports (RFURs) (available here: <http://www.cpuc.ca.gov/PUC/energy/DistGen/sgip/sgipreports.htm>). These RFURs have analyzed the use of renewable fuels in all SGIP projects. Not surprisingly, some of the OSB projects have been unable to maintain renewable fuel use.

¹³ SGIP Cost-Effectiveness of Distributed Generation Technologies Final Report, Page 5-30.

¹⁴ For a complete description of MIRRs, please see Cost-Effectiveness of Distributed Generation Technologies Final Report, Page 3-33.

Staff notes that the wide variety in project-specific economics makes a universally 'appropriate' incentive level extremely difficult to determine. Given the fact that the financial performance of a technology varies by so many factors – it is not possible to set a single statewide incentive level per technology that adequately considers the considerable variations across technologies and installations. Instead of choosing incentive levels that result in a uniform MIRR, the SGIP incentive levels should take into consideration a technology's ability to achieve both GHG reductions and total benefits to society (TRC ranking), while taking note of a given DER's relative financial performance in the absence of SGIP support.

The SGIP incentive levels recommended by staff in Table 2 encourage the adoption of technologies that use renewable fuel (plus waste heat capture and pressure reduction turbines) and other non-renewable fuel using technologies that reduce GHG emissions. Staff proposes providing higher incentives of \$1.25/watt to renewable technologies and a lower incentive of \$0.50/watt for non-renewable generators. Staff further proposes an incentive for storage technologies of \$0.50/watt for storage projects paired with other eligible SGIP technologies.

The incentive levels in Table 2 are capacity-based. As already recommended in the SGIP Staff Proposal Part I, Section 4.4.3 on hybrid PBI, staff expects that a portion of this \$/Watt payment would be paid up front, with the remainder paid out based on performance over time.

Staff notes that the incentive levels recommended in Table 2 represent a reduction from some of the historically offered incentive levels in the SGIP program. Staff notes that even with these incentive reductions, the SGIP program will still be offering incentive levels that exceed those offered throughout the California Solar Initiative (CSI), which currently offers \$0.35/watt for most projects throughout the state. (Staff is aware that solar projects have a lower capacity factor than most of the SGIP technologies under consideration.) It is important for the SGIP program to lower incentive levels in order to maximize the amount of DER that can be supported through the limited ratepayer dollars available for incentives.

Table 2. Proposed SGIP Incentive Levels by Technology and Fuel Type

Technology	Fuel ¹⁵	Total Resource Cost (TRC) Value ¹⁶	Incentive (\$/W)
Renewable Fuel (Plus Waste Heat Capture)			
Wind	n/a	1.40	\$1.25
Organic Rankine Cycle	n/a	1.54	\$1.25
Pressure Reduction Turbine	n/a	n/a	\$1.25
Fuel Cell – CHP	OSB	1.02	\$1.25
Gas Turbine (>3.5MW) – CHP	OSB	1.18	\$1.25
Microturbine – CHP	OSB	1.25	\$1.25
IC Engine (0.5MW) – CHP	OSB	1.51	\$1.25
IC Engine (1.5MW) – CHP	OSB	1.83	\$1.25
Non-Renewable			
Fuel Cell – CHP	NG	1.05	\$0.50
Gas Turbine (>3.5MW) – CHP	NG	1.11	\$0.50
Storage (paired with eligible DG technologies)			
Advanced Energy Storage ¹⁷	n/a	n/a	\$0.50

3.2 Incentive Allocation per Technology Supplier and/or Installation Contractor

The SGIP program budget has traditionally had allocations between “levels” of technologies. The SGIP Staff Proposal, Part I recommended that the SGIP budget be divided into renewable and non-renewable technologies. In addition, at this time, the staff would like to recommend that the Commission adopt a supplier concentration limit. The Commission should limit the availability of the SGIP program’s annual budget on a statewide basis to 50% for a single technology supplier and/or installation contractor in a single-year. The total annual budget should be based on the budget that is available statewide at the beginning of the

¹⁵ Fuel types referred to are OSB = onsite biogas, or NG = natural gas. Staff recommends that, in addition to onsite biogas, any onsite renewable fuel, which meets renewable portfolio standard (RPS) guidelines should be considered an eligible onsite renewable fuel and be eligible for the OSB based incentive levels. This recommendation allows for onsite biodiesel or waste vegetable oil to qualify.

¹⁶ Results shown are same as Table 1.

¹⁷ Paired with any otherwise eligible SGIP technology.

year, including any rollover from prior years.

Both the SGIP program (in 2010) and the California Energy Commission's Emerging Renewable Program (in early 2011), appear to have had a single technology supplier utilize a large percentage of the program's annual budgets. This situation is not inherently a problem, but having a program rule that caps the program supplier concentration, subject to Commission review, allows the Commission an opportunity to check in to ensure that there is no problem with the program, program design, or value of the available incentive level. This concentration limit also serves to reduce technology risk and diversify the ratepayer-funded portfolio of DER.

The California Energy Commission's Emerging Renewable Program also appears to have a situation (currently under review by the Energy Commission's staff) whereby in certain situations the total project costs may be lower than the available incentives. The SGIP and CSI programs already require that the incentives cannot exceed project costs. However, in this proposal, the staff now further recommends that the SGIP program not pay incentives that represent more than 30% of upfront project costs. Many of these SGIP technologies are eligible for investment tax credits of up to 30%. The SGIP program should require that participants be responsible for at least 40% of project costs such that they have a larger share of project cost than either the ratepayers' share or the federal taxpayers' share. Project costs must directly relate to the installation of the technology and should not include land-use remediation, building renovations (such as re-roofing), costs not directly related to the installation or operation of SGIP equipment, and/or any other project costs that are otherwise ineligible for federal tax credit purposes.

(END OF ATTACHMENT A)