

Decision **ALTERNATE PROPOSED DECISION OF PRESIDENT PEEVEY**  
(Mailed 2/7/2012)

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Application of Pacific Gas and Electric  
Company for Authority to Increase Electric  
Rates and Charges to Recover Costs Relating  
to California Solar Photovoltaic  
Manufacturing Development Facility. (U39E)

Application 10-11-002  
(Filed November 1, 2010)

**DECISION APPROVING APPLICATION**

**1. Summary**

This decision approves the application of Pacific Gas and Electric Company to invest \$9.9 million of ratepayer funds in SVTC Solar's Photovoltaic Manufacturing Development Facility (PV MDF). The PV MDF is a fee-for-service facility that will allow firms to test new product designs and manufacturing processes at a pilot scale. The availability of this service will potentially allow companies to reduce the time, cost, and risk associated with bringing new PV technologies to market, which has a reasonable probability of contributing to decreased prices of solar PV. Because the PV MDF will support development of innovative PV technologies, the five guidelines stipulated in Pub. Util. Code § 740.1 that govern our evaluation of utility expenditures on research and development apply to the proposed investment in the PV MDF. We find that the proposed investment meets all five guidelines.

## 2. Background

Applicant Pacific Gas and Electric Company (PG&E) seeks Commission approval of a plan to invest \$9.9 million of ratepayer funds in SVTC Solar, a subsidiary of SVTC Technologies, which proposes to build a new photovoltaic manufacturing development facility (PV MDF) in Santa Clara County. SVTC has already secured a commitment from the United States Department of Energy (DOE) for a \$30 million investment. However, the DOE commitment is contingent upon SVTC raising an additional \$9.9 million in matching funds.<sup>1</sup> On September 28, 2011, Californians for Renewable Energy, Inc. (CARE) filed a motion to dismiss this application. On October 5, 2011, The Utility Reform Network (TURN), the Division of Ratepayer Advocates (DRA), Greenlining Institute (Greenlining), the Marin Energy Authority (MEA), and the Western Power Trading Forum (WPTF), all of whom together with CARE had protested the application, filed a joint motion to dismiss this Application. CARE, TURN, DRA, Greenlining, MEA and WPTF are collectively referred to herein as "Protestors." On October 31, 2011, the assigned Administrative Law Judge (ALJ) denied the motions to dismiss. Pursuant to a schedule adopted at a prehearing conference on September 22, 2011, the parties filed joint opening briefs on

---

<sup>1</sup> PG&E's original application sought authority to invest \$19.8 million in ratepayer funds which was a requirement for receiving an expected grant of \$98 million from DOE. When DOE reduced the amount of the grant from \$98 million to \$30 million, the required matching investment was reduced to \$9.9 million. While the dollar amount of ratepayer money at risk has been halved by this change, the percentage of total project cost to be covered by the ratepayers has increased from 20% to just under 25%. It should also be noted that ratepayers must be charged \$17.8 million in order to provide PG&E with \$9.9 million to invest in SVTC.

November 21, 2011 and joint reply briefs on December 6, 2011. The parties waived evidentiary hearings.

PG&E argues that the PV MDF will engage in research and development (R&D) activities; that R&D investments of ratepayer funds are specifically authorized by Pub. Util. Code §§ 740 and 740.1;<sup>2</sup> and that we have approved

---

<sup>2</sup> **Section 740:**

For purposes of setting the rates to be charged by every electrical corporation, gas corporation, heat corporation or telephone corporation for the services or commodities furnished by it, the commission may allow the inclusion of expenses for research and development.

**Section 740.1:**

The commission shall consider the following guidelines in evaluating the research, development, and demonstration projects proposed by electrical and gas corporations:

- (a) Projects should offer a reasonable probability of providing benefits to ratepayers.
- (b) Expenditures on projects which have a low probability for success should be minimized.
- (c) Projects should be consistent with the corporation's resource plan.
- (d) Projects should not unnecessarily duplicate research currently, previously, or imminently undertaken by other electrical or gas corporations or research organizations.
- (e) Each project should also support one or more of the following objectives:
  1. Environmental improvement.
  2. Public and employee safety.
  3. Conservation by efficient resource use or by reducing or shifting system load.

*Footnote continued on next page*

such investments in the past. PG&E also argues that this investment is consistent with renewable energy programs sponsored by the Commission and points out that the PV MDF is supported by Governor Brown. Finally, PG&E asserts that ratepayers will receive additional compensation for the investment through their ownership stake in SVTC.

Protestors deny that the PV MDF will engage in R&D activities and argue that the investment is not authorized either by Pub. Util. Code §§ 740 and 740.1 or by § 2775.5,<sup>3</sup> which sets out specific requirements that must be met by

- 
4. Development of new resources and processes, particularly renewable resources and processes which further supply technologies.
  5. Improve operating efficiency and reliability or otherwise reduce operating costs.

<sup>3</sup> **Section 2775.5(a):**

If an electrical or gas corporation desires to manufacture, lease, sell, or otherwise own or control any solar energy system, it shall submit to the commission, in such form as the commission may specify, a description of the proposed program of solar energy development which it desires to pursue. The corporation may pursue the program of solar energy development unless the commission, within 45 days after the commission has accepted the filing of the corporation's description pursuant to this subdivision, orders the corporation to obtain from the commission the authorization to do so as provided in this section. In cases where the corporation seeks to pursue a program of solar energy development with costs and expenses to be passed through to the ratepayers, the corporation may not implement the program until it receives an authorization from the commission which includes findings and a determination, pursuant to subdivision (f), that the program is in the ratepayers' interest. No such authorization shall be required for any solar energy system which is owned or controlled for experimental or demonstration purposes. As used in this subdivision, "experimental or demonstration purposes" means a limited program of installation, use, or development the sole purpose

*Footnote continued on next page*

electrical or gas corporations seeking to invest ratepayer funds in solar energy systems. They assert that investing ratepayer funds in a for-profit start-up company is risky, unprecedented, and sets a disturbing precedent, regardless of its legality. They argue that this type of investment is better suited to a non-regulated entity and point out that shareholders of PG&E have made such investments in the past. Finally, they argue that if the Commission approves the investment, it should be subject to additional conditions designed to increase the probability that ratepayers will ultimately recover the investment.

---

of which is to investigate the technical viability or economic cost effectiveness of a solar application.

(b) The commission shall deny the authorization sought if it finds that the proposed program will restrict competition or restrict growth in the solar energy industry or unfairly employ in a manner which would restrict competition in the market for solar energy systems any financial, marketing, distributing, or generating advantage which the corporation may exercise as a result of its authority to operate as a public utility. Before granting any such authorization, the commission shall find that the program of solar energy development proposed by the corporation will accelerate the development and use of solar energy systems in this state for the duration of the program.

(d) As used in this section, "solar energy system" means equipment which uses solar energy to heat or cool or produce electricity and which has a useful life of at least three years. "Solar energy system" does not include an electric plant as defined in Section 217.

(f) The costs and expenses of implementing a program of solar energy development shall not be passed through to the ratepayers of an electrical or gas corporation unless the commission finds and determines that it is in the ratepayers' interest to do so.

### 3. Discussion

#### 3.1. Is the proposed investment authorized by Pub. Util. Code §§ 740 and 740.1?

Pub. Util. Code § 740 authorizes utilities to charge ratepayers for “expenses for research and development.” However, the statute does not define what constitutes an R&D expense. To assist our analysis of this issue, we adopt the definition of “research and development” from the federal Office of Management and Budget (OMB) guidelines:

Basic research is defined as systematic study directed toward fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific application toward processes or products in mind.

Applied research is defined as systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met.

Development is defined as systematic application of knowledge or understanding, directed toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes that meet specific requirements.<sup>4</sup>

To determine whether work done at the PV MDF falls within this definition, we look to the application and the supporting documentation including this description of the PV MDF in the SVTC grant proposal to DOE:

Our objectives and goals, which we established based on input from more than 100 PV companies, will meet the needs of the

---

<sup>4</sup> <http://www.nsf.gov/statistics/randdef/fedgov.cfm>.

industry by enabling companies to **develop** [emphasis added] innovative products with less cost, time, and risk.<sup>5</sup>

Elsewhere in their application, SVTC describes the PV MDF as...

A fabrication facility that 20-30 PV companies could use simultaneously to do pilot manufacturing on a fee for service basis. It would have baseline manufacturing equipment, plus specialized equipment bays and private locked bays for each company's unique technological process.<sup>6</sup>

In simple terms, the PV MDF is a facility housing a collection of basic manufacturing equipment for making solar panels, either alone or together with specialized tools owned by the users and stored at the facility. It is effectively a test lab in which solar panel fabrication companies can evaluate alternative product designs and manufacturing processes. The companies can rent the PV MDF rather than build their own test facilities, thereby shortening the time and lowering the cost of bringing solar panels to market.

From the short description given above, it should be clear that users of the PV MDF would not be doing either basic or applied research. Users would primarily be testing the scalability of new technologies and manufacturing processes at the PV MDF, although the materials and processes may have been developed through basic and applied research conducted elsewhere. The definition of "development" from the OMB Guidelines, if read broadly, appears

---

<sup>5</sup> SVTC Technologies' PV MDF Application for funding from DOE PV Manufacturing Initiative (DE-FOA-000259).

<sup>6</sup> *Ibid.*

to cover this facility since testing of products and processes is part of developing them.

We now turn from the general language of § 740 to the more detailed guidelines of § 740.1. In § 740.1(a), the legislature requires that we consider whether proposed R&D expenditures “offer a reasonable probability of providing benefits to ratepayers.”<sup>7</sup> PG&E cites several possible benefits to ratepayers from the proposed investment in the PV MDF: 1) the direct return of ratepayers’ investment resulting from the sale of the preferred stock ratepayers will receive in exchange for their investment; 2) the reduced price of solar energy in the future if one or more manufacturers develops a cost-saving technology as a result of lessons learned at the PV MDF; 3) the immediate benefits of leveraging \$30 million in federal grant funding and the multiplier benefits from the infusion of those dollars into the California economy; and 4) the possibility that the PV MDF stimulates increased PV manufacturing capacity and employment in California. Before delving into these examples, we note that the latter two categories of benefits are not benefits to ratepayers per se. Rather, they are benefits that accrue to the relatively small subset of PG&E ratepayers who would be employed by the MDF or manufacturing facilities, or indeed, to other utilities’ ratepayers to the extent that increased manufacturing capacity occurs in other service territories. Although increasing employment in California is

---

<sup>7</sup> Because a subsequent criterion addresses the likelihood of success of the funded activities, we frame the relevant question here as whether there is a reasonable prospect of ratepayer benefits, assuming that the PV MDF remains financially viable over a number of years and a significant number of clients do in fact utilize the PV MDF’s facilities. We explain why this latter assumption is reasonable in our discussion of the next criterion.

certainly a desirable outcome, such benefits are only tangentially relevant to the determination of whether the proposed investment in the PV MDF offers a reasonable probability of providing benefits to ratepayers as a class. Thus, we focus our attention on the preferred stock and solar energy price benefits, which are potential benefits to ratepayers per se.

In its original application, PG&E argued that the utility's financial stake in the project would "provide the potential for full reimbursement to PG&E's customers over the long term."<sup>8</sup> More specifically, it would "provide an opportunity for reimbursement of PG&E's customers after five years."<sup>9</sup> If the PV MDF remains profitable for at least five years, and SVTC requires PG&E to redeem the shares at that time, which SVTC may require at its discretion according to the terms of deal, the total return to ratepayers would be approximately \$20.8 million, which is equivalent to an effective return of less than 5 percent on the \$16.7 million of grossed-up revenue requirement that PG&E requests.<sup>10</sup> Ratepayers will only receive a positive return on their investment, at any reasonable discount rate, if SVTC conducts a public offering and PG&E is able to convert the shares to common stock and sell them at a profit.

It is important to note that there are two aspects of the proposed investment that provide some measure of protection for PG&E's ratepayers.

---

<sup>8</sup> *Application of Pacific Gas and Electric Company for Authority to Increase Electric Rates and Charges to Recover Costs Relating to California Solar Photovoltaic Manufacturing Development Facility*, dated November 1, 2010 at 1.

<sup>9</sup> *Ibid.* at 3.

<sup>10</sup> PG&E's amended application requests the authority to collect \$17.8 million for the PV MDF investment; however, this amount overstates the required revenue because it reflects an error in PG&E's tax gross-up calculations. This issue is discussed more fully in Section 3.3.

First, at the time the shares are redeemed, or SVTC Solar is liquidated, the portion of the revenues collected from ratepayers for the tax gross-up will be returned to ratepayers by PG&E. Second, the shares that PG&E will purchase on behalf of ratepayers are Series B preferred shares and are senior to the Series A preferred shares and any common shares held by SVTC Solar or its employees. In the event of liquidation, PG&E ratepayers must be reimbursed for the original purchase price and any unpaid dividends before SVTC Solar, or other holders of Series A or common shares, can recoup any of its investment.

Perhaps recognizing that the potential direct ratepayer benefit is speculative, PG&E has minimized economic return on the invested funds in its amended application and its briefs, choosing instead to emphasize the potential for lower cost solar energy as the principal ratepayer benefit:

PG&E has never claimed that its investment in the MDF would be the source of benefits for the [Research, Development and Demonstration] RD&D Project. Instead the primary benefit of the project is the RD&D potential for improved solar manufacturing processes and lower PV product costs and prices.<sup>11</sup>

Rather than emphasize the potential for direct financial benefits, PG&E characterizes the expenditure as foremost an R&D investment, which may additionally confer some direct return to ratepayers through their equity stake. As PG&E notes:

TURN again misapprehends the nature of the MDF Project – it is not an “investment” under which PG&E expects a guaranteed return at some point, it is an *RD&D project* [emphasis in

---

<sup>11</sup> Reply Brief of Pacific Gas and Electric Company dated December 6, 2011 at 5.

original] which normally would carry no “right of return” at all other than the cost reduction and cost efficiencies that may result overall. The fact that PG&E is structuring its RD&D expenditures for the project as an investment at all is unusual....<sup>12</sup>

We agree with PG&E’s characterization of the proposed expenditure. Any direct return to ratepayers from their ownership of preferred stock in the PV MDF is secondary to the goal of promoting cost reductions in solar PV technologies.

We now examine whether there is a reasonable probability of ratepayer benefits from decreased solar energy prices, which PG&E states is the primary benefit of this investment.<sup>13</sup> By its nature, virtually all R&D is risky and potential returns are uncertain. Whether any of the firms that avail themselves of the PV MDF ever achieves a manufacturing process breakthrough that results in an appreciable price reduction cannot be predicted with certainty. As a point of reference, we take official notice of the awards that have been granted to projects designed to improve solar technologies in the California Solar Initiative’s (CSI) RD&D program.<sup>14</sup> Four projects, all led by for-profit firms, have been awarded a total of nearly \$6.6 million in the improved technologies portion of the program.

---

<sup>12</sup> *Ibid.* at 10.

<sup>13</sup> We note that PG&E has nearly 1,900 megawatts (MW) of solar PV under contract and currently in development. (See “Status of RPS Projects” at <http://www.cpuc.ca.gov/PUC/energy/Renewables/index.htm>. To provide a sense of the magnitude of savings that may accrue to PG&E’s ratepayers, PG&E ratepayers could have saved up to \$190 million on these solar PV contracts if prior R&D had lowered the price per watt by 10 cents. Even if only a tenth of the cost savings were passed through in the retail price of solar panels (i.e., one cent per watt), PG&E ratepayers would have saved \$19 million.

<sup>14</sup> <http://www.calsolarresearch.org/Funded-Projects/solartech.html>.

Potential returns to ratepayers from technological improvements due to these projects are inherently speculative, and we must use our judgment to ascertain whether these projects, and any other activities that receive R&D funding authorized by the Commission, are reasonably likely to provide ratepayer benefits. The Commission had some assurance that the projects receiving funding from the CSI RD&D program were reasonably likely to yield positive results because they were selected from a competitive process. The PV MDF was similarly selected for an award by the U.S. DOE as a result of a competitive solicitation. In making the award announcement, Secretary Chu stated:

[The PV MDF] will enable start-ups, materials suppliers, and other PV innovators to eliminate a major portion of their up-front capital and operating costs during product development and pilot production. This will potentially accelerate development and time to market by 12 to 15 months. The MDF will ... aim to reduce the costs and development time for participating PV industry leaders to deliver innovative, emerging technologies from the laboratory to commercial manufacturing lines.<sup>15</sup>

Thus, it appears that in DOE's judgment, the PV MDF is likely to facilitate the development of innovative and emerging PV technologies.

SVTC's grant application indicates that it has engaged in a considerable amount of due diligence to ascertain whether a PV MDF would meet a currently unserved industry need. SVTC says that it has conducted interviews with over 30 venture capital investors and over 100 companies at all levels of the PV supply chain during the two years leading up to their application. SVTC's

---

<sup>15</sup> *Amendment to Application of Pacific Gas and Electric Company for Authority to Increase Electric Rates and Charges to Recover Costs Relating to California Solar Photovoltaic Manufacturing Development Facility*, dated July 15, 2011 at 4.

extensive research confirmed that there is an unmet need for services aimed at reducing the costs that firms incur to develop and demonstrate the manufacturability of breakthrough PV technologies.<sup>16</sup> Based on their market research, SVTC estimates that the PV MDF will allow PV start-ups to save \$10 - \$15 million by avoiding the need to create their own pilot manufacturing lines. SVTC anticipates that the PV MDF will serve approximately 180 companies during its first ten years of operation.<sup>17</sup> If a substantial fraction of this number of firms does eventually use SVTC's services, it seems likely that several of these companies will succeed in developing cost-cutting technologies and processes.

TURN questions whether a cost-reducing improvement developed at the PV MDF would flow through to consumers. "Even if STVC [sic] Solar manages to promote innovation by new entrants to the solar business, any financial gains will be realized by investors in solar companies."<sup>18</sup> However, elsewhere in its comments, TURN acknowledges that the solar industry is fiercely competitive and has experienced rapidly declining costs.<sup>19</sup> PG&E's response points out the link between the competitive nature of the PV industry and the downward pressure on prices that competition entails.

---

<sup>16</sup> SVTC Technologies' PV MDF Application for funding from DOE PV Manufacturing Initiative (DE-FOA-000259) at 6.

<sup>17</sup> *Application of Pacific Gas and Electric Company for Authority to Increase Electric Rates and Charges to Recover Costs Relating to California Solar Photovoltaic Manufacturing Development Facility*, dated November 1, 2010 at 6.

<sup>18</sup> *Opening Brief of The Utility Reform Network (Public Version)*, dated November 21, 2011 at 17 - 18.

<sup>19</sup> *Ibid.* at 6.

The fact that benefits accrue to the companies participating in the Project, with no “guarantee” of customer price reductions, is irrelevant. The solar PV industry is highly competitive, and thus any manufacturing cost savings are likely to be passed through in retail prices, given the opportunity for higher revenues and higher sales volumes due to price cutting.<sup>20</sup>

We note that the point made by PG&E applies to any R&D grant awarded to private firms, including the CSI RD&D grants mentioned above, and we are persuaded by PG&E’s argument. The key question is whether the PV MDF, if successful enough to be used by a large number of companies, is likely to promote cost-reducing innovations that will ultimately benefit ratepayers. The evidence provided by PG&E indicates there is a reasonable likelihood that it would.<sup>21</sup>

Greenlining questions whether PG&E has satisfied its § 740.1(a) burden, in part because PG&E has not demonstrated how the potential benefit of lower solar PV prices is a unique benefit to PG&E’s ratepayers.<sup>22</sup> As Greenlining argues, lower solar PV prices would benefit the solar industry and its customers at large. However, PG&E is not required to demonstrate a unique benefit because § 740.1(a) contains no such requirement. Indeed, R&D investments often provide public good benefits that accrue to persons other than the R&D funders.

---

<sup>20</sup> *Reply Brief of Pacific Gas and Electric Company* dated December 6, 2011 at 6.

<sup>21</sup> DRA spends a considerable portion of its opening brief arguing that any cost reductions that may occur will not lower the prices of any contracts already executed by PG&E. However, PG&E never claims in its filings, nor would we necessarily assume, that any cost savings in solar PV technology would apply retroactively to previously executed contracts.

<sup>22</sup> *Opening Comments of the Greenlining Institute (Public Version)*, dated February 27, 2012 at 8.

For this reason, R&D is often cited as an example of a market failure in which underinvestment is likely to occur if R&D investments are provided exclusively by the private market. As long as there is a reasonable probability that benefits will accrue to ratepayers, it is immaterial whether benefits are also likely to accrue to other entities.

We now examine the guideline stipulated in § 740.1(b), namely that the Commission should strive to minimize expenditures on projects with a low probability for success. As evidence for the likelihood of success, PG&E highlights several factors related to SVTC and the PV MDF project. PG&E points out that SVTC has a proven track record in providing MDF services to the semiconductor industry for over ten years.<sup>23</sup> As stated above, SVTC's proposal was selected by DOE as a result of a competitive solicitation. SVTC performed extensive market research with over 100 firms across the PV supply chain over the course of two years prior to submitting its application. SVTC reports that over two-thirds of the companies it surveyed stated that they are likely to use the PV MDF, indicating a large latent customer base.<sup>24</sup> Additionally, SVTC has assembled a highly qualified leadership team and technical staff, many of whom have held leadership positions in top solar PV manufacturing firms and research institutions.<sup>25</sup>

---

<sup>23</sup> *Application of Pacific Gas and Electric Company for Authority to Increase Electric Rates and Charges to Recover Costs Relating to California Solar Photovoltaic Manufacturing Development Facility*, dated November 1, 2010 at 5.

<sup>24</sup> SVTC Technologies' PV MDF Application for funding from DOE PV Manufacturing Initiative (DE-FOA-000259), at 1 and 10.

<sup>25</sup> *Ibid.* at 28 and 30.

Neither DRA nor TURN directly refuted these points. TURN does argue that any new manufacturing capacity that may result from development activities undertaken at the PV MDF is unlikely to be sited in California, but this argument does not directly rebut the evidence that the PV MDF is likely to attract a large enough customer base to remain profitable over a number of years.

SVTC's track record in other industries, the diligence of its research before deciding to launch the PV MDF, and the strength of its management and technical teams provide compelling evidence that the PV MDF has a reasonable chance of attracting a sufficient customer base to remain operable for a number of years. We thus conclude that PG&E's application satisfies the guideline stipulated in § 740.1(b).

The third guideline that we are required to consider per § 740.1(c) is whether the proposed R&D project is consistent with the utility's resource plan. PG&E points out that its procurement plans are focused on meeting the 33 percent renewable energy portfolio requirement.<sup>26</sup> Moreover, under the loading order established in the Energy Action Plan, renewable energy should be procured by PG&E and the other investor-owned utilities to the greatest feasible extent before any additional fossil-fuel based resources. Thus, the need to procure renewable energy will not necessarily end once the 33 percent goal has been met. We find that the proposed investment in the PV MDF is consistent with PG&E's resource plan.

---

<sup>26</sup> *Opening Brief of Pacific Gas and Electric Company* dated November 21, 2011 at 6.

The fourth guideline we must consider is whether the proposed R&D activities would unnecessarily duplicate research performed elsewhere. PG&E argues that the DOE selected the PV MDF for funding as part of the “SunShot” R&D initiative; therefore, the PV MDF is not duplicative of other federally-funded R&D activities. In addition, SVTC performed extensive market research to determine what needs, if any, are currently unmet for the kind of technology development support services the PV MDF would provide. The fact that the PV MDF proposal has received broad support from participants throughout the U.S. PV industry, including major renewable energy research institutions such as the National Renewable Energy Laboratory (NREL) indicates that this type of development support is not readily available elsewhere.

DRA briefly addresses whether the PV MDF is duplicative in their opening brief. DRA criticizes PG&E and SVTC for their failure to participate in a 2010 workshop hosted by the Rocky Mountain Institute (RMI) that, according to DRA, addressed “the very same ‘issues’” that the PV MDF is intended to address.<sup>27</sup> However, footnote 52 in DRA’s testimony provides an abstract of the workshop report that demonstrates the contrary is true.

This report synthesizes the specific design recommendations and technical and process best practices that emerged from RMI’s June 2010 “Solar PV Balance of System” design charrette. BoS costs – all the upfront costs associated with a PV system **except the module** [emphasis added] – account for over half of PV system cost....

The PV MDF is expressly designed to allow firms to test improvements in design and manufacture of PV modules, not balance of system components.

---

<sup>27</sup> *Division of Ratepayer Advocates’ Opening Brief*, dated November 21, 2011 at 10 – 11.

In light of the support of DOE, NREL and several major firms involved in the solar PV industry, we are reasonably assured that the development services that SVTC proposes are not duplicative.

The final guideline we must consider is whether the investment in the PV MDF supports one or more of the five objectives listed under § 740.1(e.). It appears that the PV MDF clearly supports at least two of the listed objectives: “environmental improvement” stipulated by § 740.1(e)(1) and the development of “renewable resources” stipulated by § 740.(e)(4).

For the reasons discussed above, we conclude that investment of ratepayer funds in this project is authorized by Pub. Util. Code §§ 740 and 740.1.

### **3.2. Is the proposed investment prohibited by Pub. Util. Code § 2775.5?**

DRA and City and County of San Francisco (CCSF) challenge the proposed investment in the PV MDF on the grounds that the investment violates § 2775.5. This section of the Pub. Util. Code broadly authorizes gas and electric utilities to invest ratepayer funds in programs to manufacture, lease, sell, or otherwise own or control “solar energy systems,” provided that the Commission finds that the investment will serve the ratepayers’ interest, will accelerate the use of solar energy systems in California, and will not adversely impact the market for solar energy systems.

CCSF asserts that § 2775.5 applies because it governs any efforts by electrical or gas corporations to pursue “a program of solar energy development.” CCSF quotes several occurrences in this decision in which we describe the purpose of the PV MDF as facilitating the **development** of innovative solar technologies, suggesting that the our use of the word “development” necessarily draws the proposed investment in the PV MDF into

the purview of § 2775.5.<sup>28</sup> However, CCSF selectively quotes from § 2775.5. The first sentence of § 2775.5 reads in pertinent part, “If an electrical or gas corporation desires to manufacture, lease, sell, or otherwise own or control any solar energy system, it shall submit to the commission... a description of the proposed program of solar energy development which it desires to pursue.”<sup>29</sup> The subordinate clause specifies the types of activities that the Legislature wished to include under the rubric of a “program of solar energy development.” Clearly, PG&E does not seek to “lease, sell, or otherwise own or control any solar energy system” via its proposed investment in the PV MDF, nor will PG&E, via its proposed investment in the PV MDF, manufacture solar energy systems. Rather, the PV MDF will allow other companies to test innovative product designs at pilot scale. PG&E’s ratepayers will not have any ownership interest in the companies that avail themselves of the PV MDF’s services and which may eventually manufacture solar energy systems. As CCSF points out, the purpose of the PV MDF is to produce efficiencies in solar panel fabrication and development by facilitating development of innovative PV technologies. Since the proposed investment in the PV MDF is not an investment in the kind of “program of solar energy development” defined by § 2775.5, we conclude that it is not necessary to determine whether this investment meets the requirements of § 2775.5.

Even assuming, *arguendo*, that the proposed investment in the PV MDF does constitute an investment in a “program of solar energy development,” we

---

<sup>28</sup> *Comments of the City and County of San Francisco*, dated February 27, 2012 at 2 – 3.

<sup>29</sup> A “solar energy system” is defined in § 2775.5(d) as “equipment which uses solar energy to heat or cool or produce electricity.”

disagree with DRA's arguments that the PV MDF does not meet the conditions stipulated in § 2775.5.<sup>30</sup> There are three conditions listed in § 2775.5 that the Commission must address when considering whether to authorize the use of ratepayer funds for a proposed program of solar energy development: that the proposed program will not restrict competition or growth in the solar energy industry, that the proposed program will accelerate the development and use of solar energy systems in California, and that the proposed program of solar energy development is in the ratepayers' interest.

DRA asserts that the PV MDF would restrict competition in the solar energy market, but it is difficult to follow DRA's argument. DRA seems to suggest that by providing relatively low-cost capital to SVTC Solar, other potential investors in solar energy would be disadvantaged.<sup>31</sup> DRA conflates the services the PV MDF would provide with the commercial manufacture of solar panels. SVTC Solar does not propose to manufacture solar panels for commercial distribution. If it did, DRA might have a valid point – SVTC Solar's access to low-cost capital could give it a competitive advantage compared to other manufacturers. However, this is not the case. As PG&E explains,

Contrary to DRA's claims, the MDF is open to all solar investors and users who would benefit from RD&D that could potentially improve their manufacturing processes. Furthermore, no solar manufacturer has complained that the MDF is 'anti-competitive.'

---

<sup>30</sup> CCSF states that it is unlawful for the alternate decision to approve PG&E's application merely because the alternate decision contains no analysis of the conditions imposed by § 2775.5. CCSF does not offer any arguments addressing why the PV MDF fails to meet those conditions.

<sup>31</sup> *Division of Ratepayer Advocates' Opening Brief*, dated November 21, 2011 at 14 – 15.

To the contrary, the Project enjoys wide support in the solar industry...<sup>32</sup>

We concur with PG&E's assessment and find that the proposed investment in the PV MDF would not restrict competition in the solar industry.

We turn now to the second and third conditions listed by § 2775.5. By its very nature, the PV MDF is likely to accelerate the development and use of solar energy systems in California. As we have discussed above, the PV MDF has the potential to accelerate the time to market for new technologies by 12 to 15 months at substantially lower cost. Additionally, it is in ratepayers' interest to help fund the start-up of the PV MDF because the PV MDF is reasonably likely to provide ratepayer benefits by facilitating new, innovative technologies that will produce solar energy more cheaply.

### **3.3. Should we impose additional conditions on the application?**

Although TURN supports an outright denial of the application, TURN urges us to impose up to ten conditions if we decide to approve it.<sup>33</sup> These conditions are:

1. Requiring SVTC to charge higher prices to entities that manufacture their products outside the U.S.;
2. Requiring companies that use the PV MDF to offer PG&E up to 500 megawatts of solar panels at a discount to market prices if their products achieve full commercialization;
3. Increasing the ratepayers' equity stake to reflect half of the DOE grant's proportionate share of the initial investment;

---

<sup>32</sup> *Reply Brief of Pacific Gas and Electric Company*, dated December 6, 2011 at 16.

<sup>33</sup> *Opening Brief of The Utility Reform Network (Public Version)*, dated November 21, 2011 at 2 – 3.

4. Requiring SVTC Solar to increase the dividend rate from 7.6 percent to 15 percent;
5. Requiring PG&E to backstop tax-related risks that could diminish ratepayer returns;
6. Prohibiting PG&E from requesting any additional revenue related to managing the investment;
7. Prohibiting PG&E from using the investment in SVTC Solar to enhance its corporate image, or at minimum, requiring PG&E to disclose in any public statement regarding the PV MDF that the investment was funded by ratepayers;
8. Establishing a committee composed of DRA, TURN, Consumer Federation of California, Greenlining, and PG&E with binding decision-making authority over investment decisions;
9. Prohibiting PG&E from grossing up the revenue requirement for taxes and instead requiring PG&E to create a Deferred Tax Asset; and
10. Making certain terms of the deal between PG&E and SVTC Solar public.

We appreciate TURN's creative ideas to promote the interests of ratepayers, but after careful consideration of the suggested conditions, we will only adopt the seventh proposed condition and a modified version of the eighth proposed condition. As PG&E's reply brief argues, many of these suggestions raise significant legal questions and implementation issues, would possibly deter companies from using the PV MDF's services, or increase the riskiness of the endeavor itself. Below, we address each proposed condition and provide our reasons for accepting or rejecting it.

We reject the first proposed condition as both unnecessary and unworkable. It is unnecessary because the principal potential benefit of the PV MDF is to facilitate the commercialization of lower-cost solar energy, regardless of the location where the panels, or their components, are ultimately

manufactured. The U.S.-based manufacture of solar panels developed at the PV MDF is a secondary benefit, and in any event, not a benefit to ratepayers per se. It is unworkable because many firms, particularly start-ups, may have no idea where the solar cells or other panel components of their commercial products, will ultimately be manufactured at the time they are using the PV MDF. Nor does TURN explain how panels would be treated where some components are manufactured in the U.S. and other components are manufactured elsewhere. Finally, as PG&E indicates, the need to track where PV MDF users manufacture the various components of their panels would create a significant administrative burden.

Second, TURN suggests that any firm that commences commercial manufacture of a product developed at the PV MDF should be obligated to offer up to 500 MW of solar panels to PG&E at a discount to “market prices.” TURN offers no additional explanation regarding how this obligation would be implemented. TURN does not identify what source should be used to establish prevailing market prices. PV panels are not simple commodities traded on open exchanges at a commonly known global price. Moreover, as we have stated above, it is highly likely that a company achieving a cost-reducing breakthrough at the PV MDF will in any event offer its panels at a lower cost compared to the generally prevailing market price of PV in order to capture market share. If it didn’t attempt to undercut competitors, the firm would fail to capitalize on its manufacturing cost advantage. Ignoring these considerations, TURN does not suggest what level of discount should be required. A discount of only 10 cents per watt would effectively cost a firm using the PV MDF \$50 million on a sale of 500 MW of panels. That \$50 million is far greater than the \$10 - \$15 million dollars that the firm would save by using the PV MDF compared to building its

own pilot production line. We concur with PG&E's assessment that conditions such as these would serve to deter the use of the PV MDF and thus undermine its chances of succeeding.

Third, it is also unreasonable to require SVTC to allocate 50 percent of the equity stake represented by the DOE grant to PG&E ratepayers. As PG&E explains, SVTC contributed all of the sweat equity involved with launching the PV MDF and applying for the DOE grant. SVTC, not PG&E, conducted two years of market research to gauge the need for such a facility and to tailor it to the PV industry's needs. SVTC, not PG&E, spent numerous months working with various suppliers across the PV supply chain to secure in-kind contributions to the PV MDF. It should also be noted that none of the contributors of in-kind materials that SVTC has identified will receive any equity stake in the facility in exchange for their contributions. If any entity should be entitled to a large share of the equity stake represented by the DOE grant, it is the federal government on behalf of all U.S. taxpayers. However, the federal government has chosen to give \$30 million to SVTC to launch the PV MDF, a decision that has no bearing on the equity stake to which PG&E ratepayers should be entitled. According to the terms of the deal, PG&E ratepayers will receive an equity share that is commensurate with their share of the total funds required for start-up of the PV MDF.

Addressing the fourth proposed condition, we will not require SVTC Solar to provide a return of 15 percent on the preferred shares. If SVTC Solar believed that it could pay rates of return in the range of 15 percent without jeopardizing the viability of the project, it is more likely that SVTC Solar would have been able

to attract private investors, as TURN's testimony suggests.<sup>34</sup> Assuming that the Series B shares are eventually redeemed at par plus the compounded dividend rate, a 15 percent rate of return would force SVTC to pay millions of additional dollars to ratepayers, which is money that SVTC Solar may need to ensure the solvency of the PV MDF or to reinvest in additional tools as PV technology evolves.

TURN's fifth proposed condition is suggested in case state or federal tax rates are lowered in the future. If corporate tax rates are lowered in the next year or two, this change would reduce the amount of gross-up that PG&E actually has to collect. Additionally, a decrease in the corporate tax rate in effect at the time the gross-up is returned would reduce the total return to customers if PG&E shareholders are to be left indifferent.<sup>35</sup> This is so because a lower future tax rate yields insufficient tax benefits to PG&E shareholders to fully compensate them for the return of the original gross-up plus the tax liability PG&E incurs on the gain on the investment. In order for PG&E shareholders to be left indifferent, PG&E would need to retain a portion of the gain on the investment, which would lower the effective return for ratepayers. TURN proposes instead that PG&E maintain the effective return for ratepayers by having shareholders accept the difference between the repayment of the full investment to ratepayers and the reduced tax benefits as a shareholder loss.

In response to TURN's suggestion, we clarify that PG&E should refund any over-collection to ratepayers in the event that either state or federal

---

<sup>34</sup> Workshop transcript at 144 - 145.

<sup>35</sup> *Opening Brief of The Utility Reform Network* (Public Version), dated November 21, 2011 at 21.

corporate tax rates are lowered for the tax year in which the revenues are collected, but we will not require PG&E to backstop the risk that tax rates may fall prior to the time the gross-up is returned. PG&E has not requested, nor are we granting, any shareholder benefit from this transaction. Accordingly, we will not require PG&E shareholders to bear any risk.

We reject the sixth proposed condition. The reasonableness of any request in a future rate case to recover costs related to PG&E's management of the SVTC Solar investment should be evaluated in that rate case. We will not predetermine the reasonableness of such a request in this decision.

We will adopt the seventh proposed condition and a modified version of the eighth proposed condition. We agree that any public statement that PG&E makes related to the investment in the PV MDF should indicate that the investment is funded by ratepayers.<sup>36</sup> In its eighth proposed condition TURN recommends that we should establish a ratepayer committee to oversee PG&E's investment decisions related to the shares of preferred stock PG&E will hold on behalf of ratepayers.<sup>37</sup> We decline to create a ratepayer committee with decision-making authority, but we will require that PG&E confer with TURN and DRA prior to redeeming, selling, or converting any shares in the PV MDF. PG&E may then dispose of the shares, provided that TURN and DRA send letters of support for PG&E's proposed disposition to the director of the Energy Division. If TURN and DRA do not agree with PG&E's proposed disposition, PG&E must file a Tier 3 advice letter, and the Energy Division will prepare a resolution for the Commission's consideration.

---

<sup>36</sup> *Ibid.*

As for the ninth condition, we will not require PG&E to establish a deferred tax asset rather than collect the revenues for the PV MDF investment using a more traditional gross-up. Table 1 provides examples of the implications for ratepayers' returns, assuming redemption of the ratepayers' shares after eight years, under three different scenarios: traditional gross-up for taxes, deferred tax asset with zero percent return for shareholders, and deferred tax asset with evenly shared returns for ratepayers and shareholders. As Table 1 indicates, the deferred tax asset mechanism only provides a benefit to ratepayers if PG&E is not allowed to earn a return on the asset. In other words, PG&E would be required to bear the carrying cost of the taxes paid and subsequently returned upon redemption of the shares. As we stated above, this investment provides no benefit to PG&E shareholders, and we will not require PG&E shareholders to bear a cost when they receive no benefit. Table 1 also demonstrates that if the deferred tax asset is structured to provide a shared return, the return to shareholders simply reduces the effective rate of return for ratepayers to the same level as the rate of return under the gross-up method, providing no benefit to ratepayers.

Table 1. Example of Gross-Up and Deferred Tax Asset Approaches to PV MDF Investment Assuming 7.6% Return Over 8 Years

	Gross-Up		DTA at 0% Return		DTA with Shared Return	
	Customers	Shareholders	Customers	Shareholders	Customers	Shareholders
Amount Invested	\$16.7 M	N/A	\$9.9 M	\$4.0 M	\$9.9 M	\$4.0 M
Amount Returned	\$24.8 M	N/A	\$17.8 M	\$4.0 M	\$14.6 M	\$5.9 M
Effective Rate	4.95%	N/A	7.60%	0%	4.95%	4.95%

---

<sup>37</sup> *Ibid.* at 23.

of Return						
-----------	--	--	--	--	--	--

Lastly, addressing the tenth condition TURN proposed in its opening brief, we will not require PG&E and SVTC Solar to make the requested terms of the investment public. Such terms are not typically disclosed for privately held companies, and organizations, such as TURN or DRA, with a legitimate interest in seeing the terms may do so pursuant to the non-disclosure agreement.

Aside from the ten conditions listed above, TURN also states that it believes PG&E has miscalculated the tax gross-up for failing to take into account the deductibility of state taxes on the federal return.<sup>38</sup> Using the federal and California corporate tax rates currently in effect (35 percent and 8.84 percent respectively), TURN's critique appears to be accurate. Taking the \$9.9 million that PG&E proposes to invest in the PV MDF and dividing by  $1 - (0.35 + 0.0884)$  yields \$17.6 million. The \$7.7 million difference reflects the amount PG&E claims it will pay in taxes. This result demonstrates that PG&E has not made an adjustment for the fact that the effective *net* state tax rate is 5.75 percent (calculated as  $(1 - 0.35) * 0.884$ ). PG&E has not disputed TURN's assertion. Tax accounting is often more complicated than these simple calculations suggest, but in these circumstances we will adopt TURN's suggested gross-up for taxes of \$6.81 million as a more accurate reflection of PG&E's tax liability rather than the \$7.7 million PG&E requests.

In comments, TURN suggests that the SVTC Solar application be transferred to the R&D process envisioned in the Electric Program Investment

---

<sup>38</sup> *Ibid.* footnote 50 at 21.

Charge (EPIC) proceeding (R.11-10-003).<sup>39</sup> The Phase 2 Scoping Memo issued in that proceeding projects that a decision will appear on the Commission's May 24, 2012 agenda. Any delay in issuing the proposed decision or holds on the item could extend the date of a final decision indefinitely, and it is unknown how much time will be required to implement the EPIC R&D program, solicit applications and select winning bids following the issuance of the decision. Such a delay would jeopardize the PV MDF, and accordingly, we reject TURN's suggestion.

Alternatively, TURN recommends that the funds we authorize for investment in the PV MDF be deducted from PG&E's revenue requirements for the EPIC R&D program or utility-administered R&D programs discussed in the Phase 2 staff proposal in R.11-10-003.<sup>40</sup> Although the instant application was filed nearly a year before the EPIC proceeding began, we are cognizant of the fact that the proposed investment in the PV MDF is a relatively large R&D investment that will be borne solely by PG&E ratepayers, and those funds would, under the terms of PG&E's application, be collected in addition to the funds collected for the EPIC program. The adoption of the EPIC program and the specific budget for R&D activities are the subjects of a currently pending proposed decision. Assuming that the EPIC program is approved at a subsequent Commission business meeting, it would be appropriate to provide some relief to PG&E ratepayers by using revenues collected from the EPIC

---

<sup>39</sup> *Opening Comments of The Utility Reform Network on the Alternate Proposed Decision of President Peevey*, dated February 27, 2012 at 4 – 5.

<sup>40</sup> *Opening Comments of The Utility Reform Network on the Alternate Proposed Decision of President Peevey*, dated February 27, 2012 at 5.

surcharge to fund some portion of the SVTC Solar investment. However, because we have concluded that there is a reasonable probability that the PV MDF investment will ultimately be returned to ratepayers by redemption or sale of the Series B shares, we decline to deduct the full amount of the investment from the revenues collected for EPIC. Accordingly, we will direct PG&E to use funds that may be collected for R&D under the EPIC program to provide half the total amount for the SVTC Solar investment, namely \$5.9 million in 2012 and \$2.45 million in 2013.

### **3.4. Additional Conditions Offered by SVTC Solar**

On April 13, 2012, PG&E, on behalf of SVTC Solar, distributed a letter from SVTC Solar addressed to the Commissioners to the service list of this proceeding. In the letter, SVTC Solar offered to increase the equity share of PG&E's investment from 19.7 percent to 25 percent.<sup>41</sup> Additionally, SVTC offered to provide curriculum development, on-site instruction and on-site internships for students of the University of San Francisco and to partner with the Workforce Institute, San Jose City College and Evergreen Community College to initiate a technician-level manufacturing training program. On April 17, 2012, ALJ Bemesderfer issued a ruling reopening the record to allow parties to comment on the contents of SVTC Solar's letter. Opening comments were filed April 27, 2012 by PG&E, Greenlining, and jointly by DRA and TURN. Reply comments were filed May 4, 2012 by PG&E and jointly by DRA, TURN, and Greenlining.

---

<sup>41</sup> SVTC Solar and PG&E initially redacted the percentage values in public copies of the letter and requested confidential treatment of this information. SVTC Solar subsequently waived confidentiality at the all-party meeting of May 2, 2012.

SVTC Solar's offer to raise the equity share of PG&E's investment increases the potential value of the shares to ratepayers. The joint reply comments of DRA, TURN, and Greenlining raised the possibility that the value per share of the Series B shares could be reduced by SVTC Solar to achieve the same redemption value that PG&E's investment had under the 19.7 percent equity stake stipulated in the draft term sheet. The letter from SVTC Solar, however, states that all other terms of the June 1, 2011 draft term sheet will be maintained, which we interpret to include the value per share of Series B shares. Thus, the higher equity stake should increase the redemption value of PG&E's Series B holdings in proportion to the increased equity stake. Based on that understanding, the increased equity stake would yield a redemption value of approximately \$22.1 million at year 8, rather than the \$17.4 million at the 19.7 percent stake stipulated in the June 1, 2011 draft term sheet. This effective rate of also increases from roughly 4.9 percent to 7.3 percent.

A larger equity stake also conveys additional value to ratepayers if the shares are eventually converted to common shares and sold in an initial public offering or subsequent transaction. Because the increase in the equity share provides an additional benefit to PG&E ratepayers, we will accept SVTC Solar's offer, and accordingly, we will require the final agreement to reflect a 25 percent equity holding in exchange for PG&E's investment.

SVTC's offer to provide on-site training and internship opportunities to students of the University of San Francisco as well as to initiate a technician-level training program in collaboration with the Workforce Institute, San Jose City College and Evergreen Community College will provide additional benefits to the broader community. Therefore, we will require the final agreement between

PG&E and SVTC Solar to reflect SVTC Solar's offer to engage in the educational activities described.

Before PG&E is authorized to collect the revenues for the investment in the PV MDF, we will require PG&E to file a Tier 2 advice letter with the final executed agreement between PG&E and SVTC Solar for approval by the Energy Division. The Energy Division will verify that the final agreement conforms in substance with the June 1, 2011 draft term sheet that was filed under seal, as modified to reflect the additional terms listed in the April 13, 2012 letter from SVTC Solar. If it is consistent with the previously filed term sheet, as modified to reflect the additional terms in the letter, the Energy Division shall approve the advice letter. If the Energy Division determines that the final agreement deviates from the term sheet, as modified by the April 13, 2012, in any substantive respect, the Energy Division shall prepare a resolution for the Commission's consideration. Terms that should remain confidential to protect SVTC Solar's legitimate business interests may be filed confidentially with access granted to parties that have signed the non-disclosure agreement with PG&E and SVTC.

### **3.5. Allocation of the cost of the PV MDF investment**

In a joint protest to PG&E's amended application, WPTF, MEA and the Direct Access Customer Coalition argue that unbundled distribution customers of PG&E should not be required to contribute to the investment in the PV MDF. These parties request that the Commission "make it clear that neither Direct Access nor Community Choice Aggregation customers will bear any of the risks

(or benefits) of these investments.”<sup>42</sup> We disagree with this position. All retail electricity sellers in California are obligated to attain a 33 percent renewable energy share of their supply portfolios by 2020, and the potential benefits of reduced solar energy prices will therefore accrue broadly to all retail electricity sellers and their customers. Thus, we find PG&E’s proposal to collect the revenues for the investment in the PV MDF from all distribution customers via the Distribution Revenue Adjustment Mechanism to be appropriate. Further, we adopt TURN’s suggestion that the funds collected for the PV MDF investment should be allocated to each customer class using generation cost allocators but collected via distribution rates. This method, compared to using distribution allocators, reduces the cost to residential customers and more appropriately aligns the costs of the investment with the potential benefits.<sup>43</sup> As TURN explains, because the expected benefit is the reduced cost of procuring solar energy, the benefits will ultimately flow to customer classes based on the generation costs that are ascribed to them. Residential customers should not have to bear a disproportionate share of the PV MDF investment due to the unrelated fact that their distribution costs are higher.

#### **4. Categorization and Need for Hearings**

This proceeding was initially categorized as ratesetting and it was determined that hearings were required. We affirm the initial categorization and

---

<sup>42</sup> *Late-Filed Protest of the Western Power Trading Forum, Direct Access Customer Coalition and Marin Energy Authority*, dated August 16, 2011 at 8 - 9.

<sup>43</sup> *Opening Comments of The Utility Reform Network on the Alternate Proposed Decision of President Peevey*, dated February 27, 2012 at 9 - 10.

change the hearing determination to “not required,” as the parties waived evidentiary hearings.

## **5. Comments on Proposed Decision**

The alternate proposed decision of President Peevey in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission’s Rules of Practice and Procedure. Opening comments on the Proposed Decision and/or the Alternate Proposed Decision of President Peevey were filed on February 27, 2012 by Pacific Gas and Electric Company; jointly by Western Power Trading Forum, Direct Access Customer Coalition, and Marin Energy Authority; the City and County of San Francisco, the Division of Ratepayer Advocates, the Greenlining Institute, and The Utility Reform Network. Reply comments were filed on March 5, 2012 by all parties other than the City and County of San Francisco and the Greenlining Institute. Revisions were made throughout the alternate proposed decision in response to comments.

## **6. Assignment of Proceeding**

Michael R. Peevey is the assigned Commissioner and Karl J. Bemesderfer is the assigned ALJ for this proceeding.

### **Finding of Fact**

1. The PV MDF is an R&D facility.
2. Pub. Util. Code § 740.1 enumerates five guidelines that the Commission must consider when evaluating the merits of R&D expenditures proposed by investor-owned gas and electric utilities. The guidelines include the probability that the project will provide benefits to ratepayers, the probability that the project will succeed, consistency with the utility’s resource plan, whether the proposed R&D activity is duplicative, and whether the project supports one or

more of the following objectives: environmental improvement; public and employee safety; conservation; development of new renewable resources and processes; and improvement in operating efficiency and reliability or other operating cost reductions.

3. SVTC's market research indicates that there is an unmet need for pilot manufacturing support services that will enable PV firms to test innovative product designs and manufacturing processes. The provision of such services will reduce the cost, risk and time to market for emerging PV technologies.

4. The PV MDF has a reasonable probability of enabling one or more of the firms that would use its services to achieve cost reductions in solar PV technology.

5. The solar PV industry is highly competitive, and cost reductions in manufacturing are likely to flow through to consumers.

6. The direct financial return to ratepayers of an investment in the PV MDF through their ownership in preferred stock in SVTC is uncertain and may not provide an attractive return on investment.

7. On balance, the proposed investment in the PV MDF has a reasonable probability of providing benefits to ratepayers.

8. The PV MDF received a grant from the DOE via a competitive solicitation.

9. The PV MDF has received wide support among many leading solar PV firms and research institutions. Two-thirds of the more than 100 firms surveyed by SVTC stated that are likely to use the PV MDF services, which indicates a significant latent customer base. Based on their market research, SVTC anticipates serving approximately 180 companies during the first ten years of operations.

10. SVTC has assembled an experienced and highly qualified team of management and technical staff to oversee the PV MDF.

11. The PV MDF has a reasonable likelihood of succeeding in attracting a sufficient customer base to operate for at least several years.

12. PG&E is required to achieve a 33 percent renewable share of its portfolio by 2020, and the loading order articulated in the Energy Action Plan requires PG&E to use energy efficiency and renewable energy to the extent feasible before procuring any additional fossil-based electricity.

13. By promoting cost reductions of solar PV, PG&E's proposed investment in the PV MDF is consistent with PG&E's resource plan.

14. The support that the PV MDF proposal has received from DOE, NREL, and several leading U.S. companies involved in the PV industry indicates that the services provided by the PV MDF are not duplicative.

15. The PV MDF supports environmental improvement.

16. The PV MDF supports development of renewable resources.

17. Section 2775.5 of the Pub. Util. Code governs the Commission's authorization of electrical and gas corporations' expenditures on "program[s] of solar energy development," which are described in Section 2775.5 as endeavors to "manufacture, lease, sell, or otherwise own or control any solar energy system."

18. As a result of PG&E's proposed investment in the PV MDF, PG&E would not manufacture, lease, sell, own or otherwise control any solar energy system; therefore, Section 2775.5 of the Pub. Util. Code does not prohibit the proposed investment.

19. PG&E's calculation of the gross-up for taxes overestimates PG&E's tax burden because it does not account for the deductibility of state taxes from federal returns.

20. A final agreement between PG&E and SVTC Solar has not yet been executed.

21. The benefits of reduced solar energy prices will accrue broadly to PG&E's customers, both bundled customers and unbundled direct access and CCA customers because CCAs and Electric Service Providers are also required to attain a 33 percent renewable energy share of their portfolios by 2020.

22. Reduced solar energy prices will benefit each customer class in proportion to the cost of generation to serve each customer class.

23. Whether the commercial manufacture of solar panels developed at the PV MDF occurs in the U.S. is irrelevant to the ratepayer benefit of lower solar energy prices.

24. The location where solar panels developed at the PV MDF are eventually manufactured may not be known at the time a company uses the PV MDF's services.

25. Requiring SVTC Solar to charge higher prices to companies that manufacture panels developed at the PV MDF in other countries would create an administrative burden for SVTC Solar.

26. If PV MDF users were required to offer up to 500 MW of solar panels to PG&E at a discount, it is unclear what market price benchmark would be used to establish the discount or how much of a discount would be required. Moreover, even a relatively small discount per watt could cost a firm using the PV MDF more money than the expected savings the firm would receive by using the PV MDF rather than building its own test production line.

27. The share of equity that PG&E ratepayers will receive in return for their investment is commensurate with the ratepayer investment as a share of the initial investment in the PV MDF.

28. Assuming that the preferred Series B shares purchased by PG&E are eventually redeemed at par plus compounded dividends, the additional funds SVTC Solar would have to pay in dividends to PG&E ratepayers if SVTC Solar were required to increase the rate of return to 15 percent could threaten the solvency of SVTC Solar.

29. If corporate tax rates applicable to the time period during which PG&E collects the revenues for the investment in the PV MDF are lowered, the amount of revenue needed for the tax gross-up would be reduced.

30. Requiring PG&E to backstop tax-related risk on the PV MDF investment would expose PG&E shareholders to some financial risk even though PG&E shareholders will receive no benefit from the investment.

31. The Commission may evaluate the reasonableness of a request by PG&E in a future rate case to recover costs related to managing the investment in the PV MDF in the future rate case. There is no need to predetermine the reasonableness of a possible future request for cost recovery at this time.

32. Requiring PG&E to create a deferred tax asset rather than grossing up the revenue requirement needed for the PV MDF investment would only benefit ratepayers if PG&E earns no interest on the deferred tax asset, which would impose a cost on PG&E shareholders despite receiving no benefit from the investment.

33. Parties with a legitimate interest in seeing the terms of the deal between PG&E and SVTC Solar may do so by signing the non-disclosure agreement with SVTC Solar and PG&E.

34. Section 740.1(a) of the Pub. Util. Code does not require R&D activities to provide a unique benefit to an electrical or gas corporation's ratepayers.

35. On April 13, 2012, PG&E, on behalf of SVTC Solar, emailed a letter from SVTC Solar to the Commissioners and subsequently sent a copy of the letter to the service list of this proceeding. In the letter, SVTC Solar offered to increase the equity share of PG&E's investment from 19.7 percent to 25 percent while maintaining all other terms as set out in the June 1, 2011 draft term sheet. Additionally, SVTC offered to provide curriculum development, on-site instruction and on-site internships for students of the University of San Francisco and to partner with the Workforce Institute, San Jose City College and Evergreen Community College to initiate a technician-level manufacturing training program. These concessions would provide additional benefits to the PG&E customers and the broader community.

### **Conclusions of Law**

1. Investment of ratepayer funds in SVTC Solar is authorized by Pub. Util. Code §§ 740 and 740.1.

2. Investment of ratepayer funds in SVTC Solar is not prohibited by Pub. Util. Code § 2775.5.

3. If the applicable state or federal corporate tax rate is reduced during any year that funds are collected for investment in the PV MDF, PG&E should file a Tier 1 advice letter to correct the tax rate assumptions within 30 days of the enactment of the change in tax rate and should refund any over-collection to ratepayers via a subsequent revision to the Distribution Revenue Adjustment Mechanism.

4. The reasonableness of any request by PG&E for cost recovery in a future rate case related to the management of the PV MDF investment should be evaluated in that rate case.

5. To avoid giving the impression that PG&E shareholders funded the PV MDF investment, PG&E should acknowledge in any public statement regarding the investment that it is funded by ratepayers.

6. In order to ensure that ratepayer interests are represented, PG&E should confer with DRA and TURN prior to making any decisions regarding the disposition of the shares in SVTC Solar. PG&E should be authorized to proceed with the disposition of the preferred stock upon confirmation by the Director of the Energy Division that DRA and TURN have submitted written letters of support for PG&E's proposed disposition. If DRA and TURN do not agree with PG&E's proposed disposition, PG&E should file a Tier 3 advice letter with the Energy Division, which will prepare a resolution for the Commission's consideration.

7. Because the agreement between PG&E and SVTC Solar has not been finalized, the Commission should have an opportunity to review it before PG&E collects the funds for the investment.

8. The offers by SVTC Solar to provide a higher equity stake to PG&E and to engage in educational and training activities should be accepted and included in the final agreement between PG&E and SVTC Solar.

9. Because the expected benefits of the investment in the PV MDF will accrue to all retail electricity sellers in PG&E's service territory and their customers, the revenue required for the investment should be allocated to all distribution customers of PG&E.

10. PG&E should allocate the cost of the investment in the PV MDF to each customer class using generation-based allocators.

11. The proposed investment in the PV MDF is a relatively large R&D investment that will be borne solely by PG&E ratepayers. If the EPIC program is approved at a subsequent Commission business meeting, it would be appropriate to provide some relief to PG&E ratepayers by using revenues collected from the EPIC surcharge to fund some portion of the SVTC Solar investment. However, because there is a reasonable probability that the PV MDF investment will ultimately be returned to ratepayers by redemption or sale of the Series B shares, it is reasonable to deduct a value less than the full amount of the investment from the revenues collected for EPIC. TURN's proposed conditions, other than those expressly adopted, should be rejected. The application should be approved with modifications.

## O R D E R

### IT IS ORDERED that:

1. Amended Application 10-11-002 is approved with the modifications contained in following Ordering Paragraphs.
2. Pacific Gas and Electric Company (PG&E) must file a Tier 2 advice letter containing the final agreement between PG&E and SVTC Solar with the Energy Division before PG&E is authorized to collect funds for the investment proposed in Amended Application 10-11-002. The Energy Division shall approve the final agreement if it finds that the final agreement conforms in substance with the June 1, 2011 draft term sheet submitted in this proceeding, as modified to reflect the 25 percent equity share and commitment to the educational activities described in the April 13, 2012 letter from SVTC Solar. If the Energy Division

determines that the final agreement deviates from the term sheet, as modified to reflect the revised terms in the letter of April 13, 2012, in any substantive respect, the Energy Division shall prepare a resolution for the Commission's consideration.

3. Pacific Gas and Electric Company shall collect no more than \$16.7 million for the investment in the Photovoltaic Manufacturing Development Facility rather than the \$17.8 million proposed in Amended Application 10-11-002.

4. Pacific Gas and Electric Company shall allocate the funds among customer classes using generation-based allocators but shall collect the funds in non-bypassable distribution rates.

5. If the Commission adopts the Electric Program Investment Charge (EPIC) proposed in Rulemaking 11-10-003, Pacific Gas and Electric Company (PG&E) shall use the revenues collected from the EPIC surcharge to fund the lesser of half of the approved investment in SVTC Solar or the maximum portion that PG&E's approved EPIC research and development budget allows. These amounts are \$5.91 million for the first tranche of the investment and \$2.45 million for the second tranche.

6. In any public statement regarding the investment in SVTC Solar's Photovoltaic Manufacturing Development Facility, Pacific Gas and Electric Company shall indicate that the investment is funded by ratepayers.

7. If the applicable state or federal corporate tax rate is reduced during any year that funds are collected for investment in the Photovoltaic Manufacturing Development Facility, Pacific Gas and Electric Company shall file a Tier 1 advice letter to correct the tax rate assumptions within 30 days of the enactment of the change in tax rate and shall refund any over-collection to ratepayers via a subsequent revision to the Distribution Revenue Adjustment Mechanism.

8. Prior to any redemption, sale or conversion of the preferred stock in SVTC Solar, Pacific Gas and Electric Company (PG&E) shall confer with the Division of Ratepayer Advocates (DRA) and The Utility Reform Network (TURN). PG&E may proceed with the disposition of the preferred stock upon confirmation by the Director of the Energy Division that DRA and TURN have submitted written letters of support for PG&E's proposed disposition. If PG&E does not receive the support of DRA and TURN, PG&E must file a Tier 3 advice letter with its proposed disposition, and the Energy Division will evaluate whether the proposed disposition is reasonable and shall prepare a resolution for the Commission's consideration.

9. The hearing determination is changed from Yes to No.

10. Application 10-11-002 is closed.

This order is effective today.

Dated \_\_\_\_\_, at San Francisco, California.