

Calpine Comments on *Framework for Evaluating Greenhouse Gas Implications of Natural Gas-Fired Power Plants in California*

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Calpine appreciates the opportunity to comment on the report entitled *Framework for Evaluating Greenhouse Gas Implications of Natural Gas-Fired Power Plants in California*, the conclusions of which were presented and discussed at the June 23, 2009 IEPR workshop. As the owner of the largest portfolio of gas-fired generation in California, Calpine has a keen interest in state policy towards gas-fired generation.

While the report does not specifically address the issue, the Commission's interest in the report seems to reflect its perceived need for a framework to evaluate whether specific projects for which applicants seek siting authority are consistent with state Greenhouse Gas (GHG) policy. Calpine agrees with the comments of many other workshop participants that the addition of any new and efficient gas-fired generator is likely to reduce emissions rates from the power sector. In addition, there are ample price signals and regulatory mechanisms outside of the siting process to ensure that appropriate low-carbon infrastructure is developed, including prospective cap and trade markets for GHG, potential regulation of GHG emissions by the federal Environmental Protection Agency (EPA) pursuant to the Clean Air Act,¹ potential and existing CAISO energy and ancillary services (AS) markets that reward the types of flexible generation that will be required to integrate large amounts of variable generation renewables, and the California Public Utility Commission's (CPUC) Long-Term Procurement Process. Consequently, Calpine believes that a detailed analysis of the emissions implications of specific projects in the siting process would be superfluous and potentially counter-productive to the extent that it delays the development of new resources. In addition, Calpine objects to the

¹ See this announcement of EPA's intent to regulate GHG emissions:
<http://yosemite.epa.gov/opa/admpress.nsf/0/0EF7DF675805295D8525759B00566924>.

suggestion in some of the discussion of the report at the workshop that projects may only be granted siting approval for very specific roles. Market conditions and technology change. Limiting the future uses of specific projects is likely to lead to the inefficient use of those projects and ultimately raise the costs of complying with state and national policy goals.

In addition to the foregoing, Calpine provides the following answers to some of the detailed discussion questions that were issued in advance of the workshop.

1. Chapter 7 of the GHG Framework Report identifies five roles new gas-fired power plants may fill given the state's current environmental and energy goals. Three of these are related to local reliability or operating characteristics needed by the electric system in increasing amounts as greater levels of reliance upon renewable generation takes place.

a) Do the system operators agree that these are roles that gas-fired power plants will fill in the near and medium term?

It is not clear that the five roles described in the report are distinct or described correctly. For example, “Intermittent Generation Support” and “Grid Operations Support” are not distinct. Intermittent generation does not necessarily introduce entirely new classes of operational problems. Rather, it exacerbates already existing operational problems, such as those associated with the morning ramp. Similarly, it is unclear that the traditional taxonomy of roles—energy, capacity, and AS—considered and rejected in the executive summary is no longer appropriate. The system still needs these products, albeit perhaps in different amounts and locations.

In addition, the report describes the fourth role as “meet peak demand under extreme temperature conditions.” This seems to be referring to the capability of a unit to supply Resource Adequacy capacity. The report suggests that only operationally flexible units can provide capacity. In fact, any unit that is expected to operate at the system peak can provide capacity, e.g., Diablo Canyon.

c) Should standardized definitions of plant attributes be developed? What agency or source should be relied upon for determining standardized definitions? Chapter 7 provides definitions that are drawn for CAISO's tariff. Are these definitions sufficient?

The report confuses plant attributes and wholesale products. Plant attributes include heat rates, ramp rates, minimum up and down times, start costs, etc., i.e., the items that the CAISO tracks through its Master File. These attributes enable units to sell different wholesale products including energy, ancillary services, and Resource Adequacy capacity. For example, only units with AGC can supply regulation.

For units in the CAISO, the CAISO Master File is a comprehensive enumeration of attributes.

5. The GHG Framework Report suggests extensive modeling would be necessary to understand precisely how the net GHG emissions of the electric system would change under various specified future conditions. However, the report authors expect that net GHG emissions will decline under the following futures:

- a) The addition of new gas-fired power plants to the extent necessary to permit the penetration of renewable generation to the 33 percent target.*
- b) The addition of new gas-fired power plants improving the overall efficiency of the electric system.*
- c) The addition of a new gas-fired power plant or modernization/repowering of existing capacity serving load growth or capacity needs more efficiently than the existing fleet.*

Is this a reasonable conclusion?

It is ostensibly reasonable. Contingencies that may lead to increased emissions include rapid load growth, perhaps associated with the increased use of electricity in the transportation sector, and the potential retirement of hydro and nuclear units.

8. To what extent are expected GHG emissions taken in account in procurement or project development processes?

a) From the project developer perspective?

Investor-Owned Utilities (IOUs) commonly procure new generation from independent developers through tolling agreements. Tolls involve payments to developers in return for the rights to dispatch specific plants and incur associated variable fuel, O&M, and emissions costs. The CPUC requires IOUs to consider GHG actual and expected

emissions costs in their procurement, so IOUs have incentives to sign tolling agreements for units that are clean and efficient. For example, the CPUC has required IOUs to use a specific assumed forward price curve for CO2 in their recent procurement. The fact that, all other things equal, IOUs are willing to pay more for cleaner units gives developers incentives to propose and build clean projects.

In addition, tolling agreements typically have terms that are shorter than the lives of the underlying plants. Consequently, developers may consider the emissions compliance costs that they may face for operating a plant after its initial tolling agreement expires. Furthermore, depending on how and whether the federal EPA decides to regulate GHG pursuant to the Clean Air Act and how and whether the federal government adopts carbon regulation, new plants may be required to meet emissions standards in order to obtain necessary air permits and/or operate under a cap and trade program.

9. The GHG Framework Report suggests that the role of a power plant applying for a license at the Energy Commission be considered in assessing its likely GHG emissions, but how the expected role(s) that might be played by a given power plant with a specified technology would be determined is unclear:

a) What evidence should be presented in an individual power plant licensing case to confirm that a proposed power plant intends, or can be expected, to fulfill one or more roles?

As indicated in numerous comments at the workshop, it is very likely that any economically viable new gas-fired generation project will fulfill at least one of the roles enumerated in the report. In fact, it is extremely difficult to imagine a new gas-fired project that cannot meet these goals, meet state and federal regulatory environmental policies and be attractively priced in the utility procurement process. Thus, no specific showing should be required.

b) To what extent would long-term contract(s) with load serving entities help to establish that a power plant is intended to play one or more roles?

A long-term contract with an IOU confirms that a project is consistent with state environmental policy because the CPUC, in its role overseeing IOU procurement, only approves contracts that are consistent with state policy. Contracts, however, should not

be required for siting approval because the requirement likely would delay and/or limit the range of projects that could participate in the IOU procurement of new contracts making IOU procurement less competitive and raising customer costs. The developers of most new projects typically seek IOU contracts and CEC permits for new projects in parallel. Forcing developers to obtain contracts and permits sequentially likely would delay the development process.

c) Assuming typical long-term contracts between merchant power plants and investor-owned utilities extend 10 years, how would one or more roles be identified for the proposed power plant after an initial contract was completed?

Technology and market conditions change. Consequently, the CEC should not limit its approval of new plants to ones that are purpose-built for specific roles, especially if the roles cannot be clearly defined ex ante. Nor should it limit the operations of plants that it approves to specific roles.

Limiting plants to specific roles may have perverse consequences. For example, a gas-fired plant may be approved for “intermittent generation support.” When the plant comes on line, gas prices may be significantly lower than expected so that it becomes economic to run the unit for “general energy support.” In this second role, the unit may be displacing imports of energy generated from coal and reducing aggregate emissions even though the emissions of the unit itself are increasing. Requiring generation owners to forecast the future or to seek modifications to permits as market conditions change will create unwieldy obstacles to the efficient operation of the interconnected bulk power system in the service of state and federal policy goals.