Government of the District of Columbia
Office of the Chief Financial Officer

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TAX ABATEMENT FINANCIAL ANALYSIS

TO:	**The Honorable Vincent C. Gray** **Mayor, District of Columbia**
	The Honorable Phil Mendelson **Chairman, Council of the District of Columbia**
FROM:	**Natwar M. Gandhi** **Chief Financial Officer**
DATE:	**June 29, 2012**
SUBJECT:	**"Energy Innovation and Savings Amendment Act of 2012."**
REFERENCE:	**Bill 19-749**

Findings

Section 3 of the proposed legislation makes amendments to the District of Columbia Official Code to exempt solar and cogeneration energy systems from District personal property tax (DC Code § 47-1508(a)). Because District renewable energy portfolio standards, along with Federal renewable energy incentives currently in place, are sufficient to make investment in solar systems a profitable venture, the proposed solar energy exemptions are not generally necessary in order for solar power systems to be developed in the District. The proposed cogeneration exemptions are also unlikely to be necessary, as cogeneration systems generally provide a reasonable return on investment.

This analysis does not assess the profitability of any specific solar or cogeneration system, which could have varying construction or financing costs, rather it assesses the necessity for the categorical exemptions in order to encourage these energy systems in the District. Because the proposed exemptions will increase the rate of return for solar and cogeneration system investors, the legislation is likely to encourage a higher rate of investment in these technologies, resulting in more of these energy systems being developed sooner.

Background

The proposed tax incentives are intended to encourage private entities to invest in energy production systems that will reduce reliance on traditional electricity sources, thereby reducing greenhouse gases. The federal government subsidizes solar power with renewable energy tax incentives and the District further incentivizes solar power through its utility regulation. The

federal government also subsidizes some cogeneration systems through a Combined Heat and Power (CHP) investment tax credit.[1]

Much of the solar energy production market is driven by Renewable Energy Certificates (RECs), which is what can make solar profitable. Where RECs are in place, a third party solar power company can invest in a large solar field on the ground or on the top of a building. In the latter case, the building owner benefits from a lower electricity rate, and the solar power company benefits from both from the revenue from selling electricity to the owner, and, more importantly, from selling the RECs to the local utility. The utility isn't purchasing the energy, rather it is purchasing an "offset" toward its regulatory standards. The value of the solar RECs in the District is significantly higher than the value of the revenue from the direct sale of electricity to the owner.

As with solar, a property owner can invest directly in a cogeneration system, or can contract with a third party cogeneration company which will invest in a system to support a building or group of buildings. In the latter instance, the owner benefits from long-term energy savings without having to finance the upfront capital investment. The cogeneration company installing and maintaining the cogeneration system would do a cost/benefit analysis to determine whether to make the investment.

The incentives proposed in the legislation are likely to accelerate the production of alternative energy systems in the District, because the financial benefit of building solar and cogeneration systems will be enhanced. However, based on the Office of the Chief Financial Officer's (OCFO) analysis, owners or private companies seeking to participate in the development or implementation of these alternative energy systems do not require additional financial incentives to do so.

Financial Analysis

The Exemptions and Abatements Information Requirements Act of 2011 requires the analysis provided by the Office of the Chief Financial Officer (OCFO) to contain certain information. The required information is included below.

A separate fiscal impact statement will be prepared on the proposed legislation.

Terms of the Exemption or Abatement

The legislation excludes from personal property tax:

1) all systems using exclusively solar,[2] and
2) cogeneration systems[3]

[1] Cogeneration systems are not considered a "renewable" energy source (like solar), they can lighten the demand on electricity that is often generated from older, dirtier plants and they can generate as-needed energy on location.

[2] Per D.C. Official Code § 34-1431,"Solar energy" means radiant energy, direct, diffuse, or reflected, received from the sun at wavelengths suitable for conversion into thermal, chemical, or electrical energy, that is collected, generated, or stored for use at a later time.

Annual Proposed Value of the Exemption or Abatement

The type of programmatic exemptions provided in the legislation are difficult to value, as it is not easy to predict the number of energy companies expected to build new solar energy systems or cogeneration systems in the District. Examples of what the value of the exemption could be are below.

A one megawatt (MW) solar system built on top of a building is expected to cost between $3 million and $3.5 million to install. An owner of a system of this size would pay approximately $100,000 in personal property tax for the first year. Because solar panels are depreciated over 10 years, the owner would pay $90,000 in the second year, $80,000 in the third year, continuing with a declining payment for 10 years. After 10 years the owner would pay no personal property tax. In this instance, the total value of the abatement over 10 years would be $550,000. Solar systems are generally underwritten to last 20 years, but are expected to last 25 to 30 years.

A cogeneration system can cost between $1800 and $2800 per kilowatt, this ranges based on size and type of facility. A cogeneration system supplying heat and electricity to multiple buildings and built to support 1.5 million kilowatts could expect to cost approximately $30 million[4]. The value of the personal property tax exemption in this case would be approximately $816,000 in the first year. That value would go down as the personal property portion of the facility depreciates. This system would be depreciated over 15 years. In this scenario, the total value of the abatement would be $6.5 million over 15 years. Like solar systems, cogeneration systems are expected to last significantly longer than their depreciation schedule.

Summary of Community Benefits

Not submitted.

Financial Analysis

Solar Systems

The proposed legislation exempts systems using solar energy from personal property tax. In the District, the first $225,000 of property value is excluded from the personal property tax. Therefore, solar panels put in place for small businesses and residences are unlikely to be affected by the legislation.

The Renewable Energy Portfolio Standard Act of 2004 sets standards for government-regulated utilities such that a certain percentage of electricity sold in the District would be generated through solar power or the utility would be fined. Until FY 2011, utilities could meet those standards by purchasing solar energy or solar offsets from solar power companies outside of the District. However the Council subsequently passed the Distributed Generation Amendment Act of 2011, which increased the share of solar power that would count towards the renewable energy portfolio

[3] Per the proposed legislation Cogeneration Systems shall mean systems that produce both (A) electrical energy and (B) steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating, or cooling purposes.
[4] Approximately 20 percent of this value is not subject to personal property tax, but to real property tax.

standard and required the solar energy systems generating these offsets be located in the District.[5] That legislation significantly increased the demand for solar power, while at the same time greatly shrinking the market from which solar energy can be offset to meet the standards. The result is a strong market in the District for local solar power companies with utilities likely to pay between $300 and $500 per megawatt hour (MWH) for the foreseeable future.[6] This rate, combined with Federal tax incentives to encourage solar energy production would make the abatement proposed in the legislation unnecessary. The market is already in place to support profitable development of solar power. The personal property tax abatement would provide additional incentives to make solar development more profitable. A higher rate of return is likely to increase the rate at which solar energy systems are developed in the District.

Cogeneration Systems

Cogeneration systems generally operate on a dedicated basis for the buildings in which they are installed, or for multiple buildings that share a heating plant.[7] Traditionally cogeneration has been used in institutional settings such as hospitals and universities, but more and more it is being used by large apartment and other buildings. Firm numbers on costs and savings are difficult to come by because the size and energy demands of buildings vary so widely. Prior to deciding on utilizing a cogeneration system, owners generally complete a rigorous cost benefit analysis to confirm that cogeneration is a viable option for their site. Studies indicate that cogeneration systems average 70 percent to 95 percentage efficiency compared to an approximate 50 percentage efficiency of conventional heating systems. Cogeneration companies claim that their systems are up to 2½ times more efficient than the electric utility and that they can reduce monthly energy expenses from 30 percent to 60 percent. Estimated average payback period for a typical large apartment building, for example, is said to be three to five years.[8] Factors such as installation costs, type of building or buildings served, climate and temperature, and the comparative cost of electricity from the traditional electricity grid will affect that payback time. While the initial investment may be substantial, the energy savings can be expected to provide a return on that investment. Research suggests that the investment value is generally returned within 5 to 8 years. The proposed legislation will provide a tax abatement that will increase the rate of return for the owner, thereby reducing the time it takes for the cogeneration system owner can recoup the upfront investment.

[5] The 2011 legislation limited the renewable energy credits from solar energy to solar systems of 5 megawatts ("MW") or less located within the District or in locations served by the distribution grid serving the District prior to January 31, 2011.

[6] Until there is sufficient solar in the District to meet the standard, the fine of $500 per kwh will essentially dictate the solar rate. Thus the DC rate is inflated when compared to most (but not all) solar rates around the country, see http://srectrade.com/srec_prices.php. As current contracts between utilities and solar power companies expire, the OCFO expects the District's rate to initially increase. This could make solar even more profitable.

[7] Large combined cycle cogeneration systems can also be developed by utilities or to sell energy to the electricity grid, while those systems were considered they were not the primary focus of this analysis.

[8] Stephen Varone, AIA and Peter Varsalona, PE, Rand "Installing a Cogeneration System: http://www.randpc.com/ask/ate_Cogeneration.html