

## **Energy Tax Opportunities with Data Center LED/ Chiller Combinations and Fuel Cells**

By Charles R. Goulding and Charles G. Goulding

Data centers have traditionally been very high energy users particularly because of the large electrical process load necessary to cool servers. Due to their large electricity consumption, data center energy use is being closely scrutinized by leading environment groups. Many data centers are currently upgrading to energy efficient lighting and energy efficient HVAC and using Internal Revenue Code Section 179D EPAct tax incentives to improve their energy projects investment return.<sup>1</sup> In addition data centers are increasingly utilizing fuel cells supported by 30% tax credits/cash grants to generate a substantial portion of their energy requirements.

In April of 2011, the Federal government announced that they were closing over 100 underutilized data centers, specifically mentioning the opportunity the save substantial electricity costs.

### **The Section 179D EPAct Tax Opportunities**

Pursuant to Section 179D of EPAct and its underlying ASHRAE (American Society of Heating Refrigeration and Air Conditioning) building energy code, commercial buildings are eligible for energy efficiency tax deductions of up to \$1.80 per square foot. If a building's energy reducing investment doesn't qualify for the full \$1.80 per square foot deduction, then deductions are available for any of the three major sub-systems, including:

1. Lighting
2. HVAC (Heating, Ventilation and Air Conditioning).
3. The building envelope.

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<sup>1</sup> Charles Goulding, Jacob Goldman, and Cassandra Gengler, December 2010, *The Tax Aspects of Cloud Computing and Data Centers*, Corporate Business Taxation Monthly, pages 9-12 and 35-36.

Each component can qualify for up to 60 cents per square foot in EAct tax deductions. The building envelope is anything on the perimeter of the building that touches the outside world including roof, walls, windows, doors, the foundation and related insulation layers.

### **Alternative Energy Tax Credits and Grants**

There are multiple 30% or 10% tax credits available for a variety of alternative energy measures with varying credit termination dates. For example, the 30% solar tax credit and 30% fuel cell credit expires January 1st 2017 and the 10% Combined Power tax credit also expires January 1st, 2014. The 30% closed loop and open loop biomass credit expires January 1st, 2014.

All alternative measures that are eligible for the 30% and 10% tax credits are also eligible for equivalent cash grants for the three years starting January 1st 2009 and ending December 31st 2011.

### **LED Lighting Tax Incentives**

Low wattage LED lighting is becoming a very popular data center lighting solution because LED's work well in cold environments and they measurably reduce cooling costs related to hotter higher wattage previous generation lighting technologies.

### **Chiller Tax Incentives**

Data Centers less than 150,000 square feet that utilize chillers for HVAC get special tax benefits under the EAct tax provisions. These special benefits arise because the EAct tax calculation utilizes less efficient package units in the ASHRAE reference data center building comparison as compared to measurably more efficient central chillers.<sup>2</sup>

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<sup>2</sup> Charles Goulding, Jacob Goldman, and Joseph Most, October 2010, *The Energy Tax Aspects of Chillers*, Corporate Business Taxation Monthly, pages 15-16 and 41-42.

## LED Lighting/Chiller Combinations

Virtually all data center LED Lighting/ Chiller combinations for all data centers less than 150,000 square feet buildings will qualify for at least a \$1.20 per square foot EPAct tax deduction and many will qualify for \$1.80 per square foot EPAct tax deduction. The following table presents the EPAct tax deduction ranges for LED/chiller combinations starting at 50,000 square feet.

**Data Center LED/ Chiller Combined EPAct Tax Deductions**

Square Footage	\$1.20 Tax Deduction	\$1.80 Tax Deduction
50,000	\$ 60,000	\$ 90,000
60,000	\$ 72,000	\$ 108,000
70,000	\$ 84,000	\$ 126,000
80,000	\$ 96,000	\$ 144,000
90,000	\$ 108,000	\$ 162,000
100,000	\$ 120,000	\$ 180,000
110,000	\$ 132,000	\$ 198,000
120,000	\$ 144,000	\$ 216,000
130,000	\$ 156,000	\$ 234,000
140,000	\$ 168,000	\$ 252,000

## Large Data Centers

Large data centers consume vast amounts of electricity and can save substantial operating costs and qualify for large EPAct tax deductions by combining LED lighting and very energy efficient HVAC such as geothermal<sup>3</sup>, thermal storage<sup>4</sup>, and very high energy-efficient chillers.<sup>5</sup>

The magnitude of EPAct tax deductions available to some of the larger data centers and carrier hotels is presented below:

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<sup>3</sup> Charles Goulding, Joseph Most, and Spencer Marr, December 2010, *The Energy Tax Aspects of Geothermal Heat Pumps*, Corporate Business Taxation Monthly, pages 13-14 and 36-37.

<sup>4</sup> Charles Goulding, Jacob Goldman, and Taylor Goulding, November 2009, *The Tax Aspects of Thermal Storage and Time-of-Day Pricing*, Corporate Business Taxation Monthly, pages 13-14 and 37-38.

<sup>5</sup> Charles Goulding, Jacob Goldman, and Joseph Most, October 2010, *The Energy Tax Aspects of Chillers*, Corporate Business Taxation Monthly, pages 15-16 and 41-42.

**Potential EPAct 179D Tax Deductions for Large Data Centers**

Property	Total Square Footage	Lighting		HVAC Maximum Deduction	Building Envelope Maximum Deduction	Total
		Minimum Deduction	Maximum Deduction			
111 8th Avenue, NYC (Carrier Hotel)*	2,800,000	\$ 840,000	\$ 1,680,000	\$ 1,680,000	\$ 1,680,000	\$ 5,040,000
The Informant, Dallas (Carrier Hotel)	1,200,000	\$ 360,000	\$ 720,000	\$ 720,000	\$ 720,000	\$ 2,160,000
350 East Cermall, Chicago, IL	1,100,000	\$ 330,000	\$ 660,000	\$ 660,000	\$ 660,000	\$ 1,980,000
NSA, Utah	1,000,000	\$ 300,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 1,800,000
QTS Metro Data, Atlanta, GA	990,000	\$ 297,000	\$ 594,000	\$ 594,000	\$ 594,000	\$ 1,782,000
60 Hudson Street, NYC (Carrier Hotel)	943,000	\$ 282,900	\$ 565,800	\$ 565,800	\$ 565,800	\$ 1,697,400
DuPont Fabros, Ashburn, VA	800,000	\$ 240,000	\$ 480,000	\$ 480,000	\$ 480,000	\$ 1,440,000
Digital Realty, Dallas, TX	800,000	\$ 240,000	\$ 480,000	\$ 480,000	\$ 480,000	\$ 1,440,000
3000 Skyline Dallas	700,000	\$ 210,000	\$ 420,000	\$ 420,000	\$ 420,000	\$ 1,260,000
Microsoft, Chicago, IL	700,000	\$ 210,000	\$ 420,000	\$ 420,000	\$ 420,000	\$ 1,260,000
NAP of the Americas, Miami, FL	700,000	\$ 210,000	\$ 420,000	\$ 420,000	\$ 420,000	\$ 1,260,000
One Wilshire (Carrier Hotel)	665,000	\$ 199,500	\$ 399,000	\$ 399,000	\$ 399,000	\$ 1,197,000
Microsoft, Phoenix, AZ	538,000	\$ 161,400	\$ 322,800	\$ 322,800	\$ 322,800	\$ 968,400
Digital Realty, Ashburn, VA	525,000	\$ 157,500	\$ 315,000	\$ 315,000	\$ 315,000	\$ 945,000
Apple iData Center in Maiden, NC	500,000	\$ 150,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 900,000
Google Lenoir, NC	500,000	\$ 150,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 900,000
Equinix Ashburn, VA	500,000	\$ 150,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 900,000
Microsoft, Quincy, WA	470,000	\$ 141,000	\$ 282,000	\$ 282,000	\$ 282,000	\$ 846,000
Microsoft, San Antonio, TX	470,000	\$ 141,000	\$ 282,000	\$ 282,000	\$ 282,000	\$ 846,000
EMC, Durham, NC	450,000	\$ 135,000	\$ 270,000	\$ 270,000	\$ 270,000	\$ 810,000
Microsoft, Las Vegas, NV	407,000	\$ 122,100	\$ 244,200	\$ 244,200	\$ 244,200	\$ 732,600
<b>Totals:</b>	<b>16,758,000</b>	<b>\$ 5,027,400</b>	<b>\$10,054,800</b>	<b>\$10,054,800</b>	<b>\$ 10,054,800</b>	<b>\$ 30,164,400</b>

\*Note: A carrier hotel is co-location data center facility serving the needs of multiple clients.

### **IRS Notice Rev Proc 2011-14**

IRS notice 2011-14 enables data centers that previously missed eligible EPAct tax deductions to recover these incentives for both new centers and existing building data center conversion projects completed since January 1, 2006. This is particularly important notice for data centers because the data center facility sector has experience explosive growth since January 1, 2006, both for new data centers and for existing building conversions to data centers.

### **Data Center Alternative Energy Tax Opportunities**

Large data centers and carrier hotels consume vast amounts of energy and are excellent candidates for onsite alternative energy electricity generation.

The following table presents an example of data center geothermal investment tax planning for the year 2011:

#### **Data Center Geothermal Tax Planning Example 2011 Tax Year**

<b>100,000 Sq. ft. Geothermal Project</b>			
1)	Project Cost		\$1,600,000
2)	Project Cost (after rebate)		1,440,000
3)	Tax Credit or Grant 10%	(2 X 0.10)	144,000
4)	After 10% Tax Credit	(2-3)	1,296,000
5)	Remaining Basis (with 50% add on)	4 + ½(3)	1,368,000
6)	Bonus Depreciation		1,368,000
7)	Value of above at 35%	6 X 0.35	478,000
8)	Total First Year Tax Benefit	(3+7)	622,800
9)	Net Investment	(2-8)	\$817,200
10)	Excess EPAct Tax Deduction		\$180,000

## Fuel Cells

Fuel cells convert chemical energy into electric energy through use of a reactant (hydrogen fuel cells use hydrogen as a reactant) and an oxidizing agent. Combustion is not involved in this process, making fuel cells quite environmentally friendly.

The following example illustrates the potential incentives related to the 2011 year \$2,000,000 fuel cell investment with a \$800,000 utility rebate.

### Fuel Cell Tax Planning Example

1)	Project Cost		\$2,000,000
2)	Project Cost (after rebate)		1,200,000
3)	Tax Credit or Grant 30%	(2 X 0.30)	360,000
4)	After 30% Tax Credit	(2-3)	840,000
5)	Remaining Basis (with 50% add on)	4 + ½(3)	1,020,000
6)	Bonus Depreciation		1,020,000
7)	Value of above at 35%	6 X 0.35	357,000
8)	Total First Year Tax Benefit	(3+7)	717,000
9)	Net Investment	(2-8)	\$483,000

## Conclusion

In an information technology driven economy data centers have become a fast growing facility category. Data centers use substantial amounts of electricity and now find themselves under the microscope regarding energy consumption. New energy LED lighting technologies and high efficiency chillers can materially reduce energy use in these facilities. Fuel cells are becoming an increasingly popular way to supply on site electricity to these facilities. All three upgrades meaning LED lighting, high energy efficiency chillers and fuel cells typically qualify for large tax savings.

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