RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Secretary of the Commission via Electronic Filing
Indiana Utility Regulatory Commission
PNC Center
101 West Washington Street, Suite 1500 East
Indianapolis, Indiana 46204

December 10, 2010

Re: Experimental Time-of-Use Service For Electric Vehicle Charging on Customer Premises (Rate EVX)

Dear Secretary:

Pursuant to 170 IAC 1-6 (Rule 6), the Thirty-Day Administrative Filing Procedures and Guidelines Rule, Indianapolis Power & Light Company (IPL) submits herewith for filing Experimental Time-of-Use (TOU) Electric Vehicle (EV) tariff rates, which are "New rates" as defined in 170 IAC 1-6-2(6). This tariff incorporates timely yet evolving industry information in preparation for initial electric vehicle deployment in December 2010.

IPL is the recipient of a Smart Grid Investment Grant through the US Department of Energy enacted through the American Recovery and Reinvestment Act (ARRA), a portion of which may be used to partially fund an electric vehicle pilot. IPL is seeking cost recovery of the non-DOE funded portion of this pilot in a separate docketed proceeding.

With the proposed experimental Rate EVX, IPL is planning to test a TOU rate structure associated specifically with charging EVs on customer premises to encourage off-peak charging and optimize its distribution system equipment. This TOU EV rate will provide IPL the ability to assess customer responses to time varying rates for EV charging, and will provide IPL with information about utility system impacts of EV charging activities, as well. IPL also intends to explore all metering options, including revenue grade meters within chargers.

EVs represent an exciting possibility for increasing vehicle efficiency, decreasing tailpipe emissions, reducing our nation's dependence on foreign oil, and improving Homeland Security. However, EVs also represent a challenge for the electric utility industry, in that uncontrolled charging of large volumes of EVs could substantially increase generation, transmission, and distribution infrastructure needs. IPL believes that TOU rate structures are an important way to encourage controlled charging during off-peak hours to mitigate impacts on utility infrastructure needs, even with relatively low volumes of EVs. This filing is IPL's first step toward meeting the challenges presented by electrifying transportation for our industry.

IPL recognizes electric vehicle charging is new territory and customer acceptance and usage patterns are completely unknown. Given the cutting edge experimental nature of this proposed new EV tariff, IPL respectfully requests that, during the term of the experimental tariff, the Commission grant IPL flexibility to modify terms of the experimental rates as necessary or desirable to optimize these experiments. IPL will file any such proposed modifications with the Commission. Following the completion of the EV charging demonstration program, IPL will perform process and impact evaluations, and will share these evaluations with both the IURC and the OUCC.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Background information on EVs, IPL's proposed EV tariff, and an EV TOU Study are included as Exhibits A, B, and C, respectively.

IPL respectfully requests approval of this tariff under the 30-day filing procedure for activation beginning with the date of Commission approval and continuing for approximately two years.

The experimental Rate EVX was designed to be "revenue neutral," meaning that if all customers who selected the experimental tariff did not change their electrical usage behavior, they would collectively essentially pay the same total charges as they would under existing tariff rates.

The following documents are attached:

Exhibit A – Background Information on Electric Vehicles and Electric Utility Industry Issues

Exhibit B - IPL's proposed Experimental Time-of-Use Service For Electric Vehicle Charging on Customer Premises (Rate EVX), Original Sheet Nos.130, 131, and 132

Exhibit C – Assessment of Time-Based Pricing at Indianapolis Power and Light: Supplemental Report, prepared by Christensen Associates Energy Consulting, LLC

In addition, this filing contains a Verified Statement by IPL concerning notification of customers regarding the proposed new experimental rates and a copy of such notification. IPL appreciates your assistance in processing this request through the Commission's 30-day filing procedures.

Upon approval of IPL's proposed Rate EVX, IPL will submit, for approval by the Electric Division, redlined and clean versions of the Tariff Table of Contents (Page No. 2) and of the following Contract Riders, which will be impacted as to applicability only:

Standard Contract Rider No. 6 – Fuel Cost Adjustment
Standard Contract Rider No. 7 – Employee Billing
Standard Contract Rider No. 20 – Environmental Compliance Cost Recovery Adjustment
Standard Contract Rider No. 21 – Green Power Initiative
Standard Contract Rider No. 22 – Core and Core Plus Demand-Side Management Adjustment

Please contact me with any questions regarding this matter.

Sincerely,

Ken Flora

Ken Flora
Director, Regulatory Affairs

Attachments

cc: Office of the Utility Consumer Counselor

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

EXHIBIT A

Background Information on Electric Vehicles and Electric Utility Industry Issues

Introduction

Electricity has long been considered the premier alternative fuel for vehicles due to its high efficiency. The internal combustion engine (ICE), which is used in almost all vehicles in operation today, has an efficiency of around 16%. That means that it only uses a small portion of the energy in the fuel it consumes. By contrast, electric motors are much more efficient at around 80%.[1] This means that electricity-powered vehicles can operate at a fuel cost much lower than that of gasoline-powered vehicles.

There are three major types of electricity-powered vehicles. Electric Vehicles (EVs) run on electricity only. They need to be plugged in to recharge once the storage battery is depleted. Hybrid Electric Vehicles (HEVs) use two sources of energy, one of which is electricity. An HEV consists of an energy conversion unit, such as an ICE or fuel cell, and an electric motor that generates power "on the go" and stores it in the battery. Plug-in Hybrid Electric Vehicles (PHEVs) combine the technology and benefits of EVs and HEVs. Like HEVs, they have two types of motors, and are capable of operating either on stored electricity or with gasoline. However, PHEVs have larger batteries which can be charged externally to provide a significant amount of driving range on electricity alone, thus operating even more efficiently.

While PHEVs have a higher upfront cost due to their batteries, they have lower operating costs. A gallon of gasoline delivers the same amount of drive energy as approximately 10 kWh of electricity making the cost of operating a PHEV on all electric mode less than $1/gallon based on average U.S. residential rates. Using time-of-use off-peak rates, this cost could be cut to closer to $0.50/gallon.[2]

American Recovery and Reinvestment Act of 2008; IPL's Participation as a Vendor

The American Recovery and Reinvestment Act of 2008 (ARRA), among other things, provides $2 billion in grants to support the manufacturing of advanced vehicle batteries and components. In 2009, the state of Indiana was awarded a $68.621 million grant from the U.S. Department of Energy's (DOE) State Energy Project (SEP) American Recovery and Reinvestment Act (ARRA) funds, to address Indiana's energy priorities and adopt emerging renewable energy and energy efficiency technologies. Subsequently, on June 29, 2010, the state of Indiana awarded a $1.9 million sub-grant to Energy Systems Network (ESN), a division of the Central Indiana Corporate Partnership, for the purpose of purchasing battery storage, electric vehicle charging stations, and smart-grid technologies at existing commercial and government buildings, parking facilities, and electric vehicle customer properties. ESN and IPL are currently negotiating a vendor agreement, whereby IPL would procure and install fast-charging electric vehicle supply equipment units and associated software at locations within its assigned utility service area in the Indianapolis area, for the purpose of testing and demonstrating the usefulness of such equipment and assessing the impact

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[1] *See,* Research Reports International, "The Impact of Plug-in Hybrid Electric Vehicles on the Electric Industry," May 2010 (3rd Ed.).
[2] *Id*.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

of such equipment upon utility systems. In connection with this testing and demonstration project, IPL desires to implement the new experimental EVX and EVP rates described in the attached 30-day filing request.

Government Support for EVs

In addition to the ARRA funding described above, several additional government initiatives have been established to help further the advancement of EVs. The Federal Government provides a tax credit for EVs up to $7,500 for vehicles with battery capacity greater than 4 kWh. A limit of 200,000 vehicle credits is available for each manufacturer. A 10% tax credit up to $4,000 for the conversion of a vehicle to PHEV with a minimum battery capacity of 4 kWh is also provided by the Federal Government.[3] In addition, as referenced previously, it provides $2 billion in grants to support the manufacturing of advanced vehicle batteries and components. The DOE has undertaken the Vehicle Technologies Program to develop more energy efficient and environmentally friendly highway transportation technologies that enable America to use less petroleum[4].

Potential Benefits of EVs

Currently, about 97% of the transportation sector relies on oil.[5] EV technology has the potential to bring about a convergence of the electric and transportation industries by making electricity a prime power source for vehicles. The benefits of this convergence include: reduced transportation fuel costs; reduced tailpipe emissions; and increased national security as a result of reduced dependence on foreign oil.

Today, approximately two-thirds of the oil used in the U.S. goes towards powering the transportation sector and 66% of this amount is imported from other countries. In July 2008, the spot market price of oil reached $147/barrel (bbl) and the average U.S. retail price for regular gasoline climbed above $4 per gallon in large part due to high crude oil prices. While gasoline prices have come down significantly from these highs due to the recession, they are likely to rise again as the economy recovers.[6] In contrast, the national average cost of electricity in the U.S. is 8.5¢/kWh (and Indiana's average cost of electricity is even lower). At this price, EVs could operate on electric power at $0.02 - $0.04 per mile.[7] This gives EVs a significant operating cost advantage over gasoline-powered vehicles which operate at an average of $0.10 - $0.14 per mile depending on the price of gasoline.[8]

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[3] U.S. Department of Energy. Details at www.fueleconomy.gov
[4] U.S. Department of Energy, Vehicle Technologies Program. Details at http://www1.eere.energy.gov/vehiclesandfuels/
[5] *See*, Research Reports International, "The Impact of Plug-in Hybrid Electric Vehicles on the Electric Industry," May 2010 (3rd Ed.).
[6] The Energy Information Administration projects that oil prices, in real terms, will rebound following the global recession, to $95 per barrel in 2015 and $133 per barrel in 2035. Growth in non-OPEC production will come primarily from high-cost conventional projects in regions with unstable fiscal or political regimes and from relatively expensive unconventional liquids projects. *See*, Energy Information Administration, *Annual Energy Outlook 2010,* May 2010.
[7] *See*, Idaho National Laboratory, "Comparing Energy Costs per Mile for Electric and Gasoline-Fueled Vehicles." *See also*, U.S. Department of Energy, "Benefits of Hybrid, Plug-In Hybrid, and All-Electric Vehicles."
[8] *See*, U.S. Department of Energy Transportation Energy Data Book, *Chapter 4 Light Vehicles and Characteristics, "Summary Statistics for Cars."* 2008.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

The transportation sector is a large emitter of greenhouse gases (GHGs).[9] EVs can reduce GHG emissions by using electricity that is produced with fewer GHG emissions than those given off by gasoline. By displacing most of the gasoline-fired vehicles on the road, EVs have the potential to significantly reduce the amount of GHGs emitted from the transportation sector.

Our national security is greatly impacted by our dependence on imported energy. This dependence makes our country more strategically vulnerable to major energy suppliers like Russia, Iran, and Venezuela – who all have their own political agendas. Furthermore, a dependence on imported energy limits a country's ability to pursue national security interests. Dependence also requires the country to compete directly with other importing nations straining international relationships between these countries. National security can be enhanced by increasing the "energy security" of the nation – making our supply of energy more reliable and affordable.

The U.S. imports approximately 72% of its oil.[10] This equates to approximately 15% of total world oil production.[11] EVs are an attractive solution for decreasing our country's dependence on imported oil. "In fact, mandating that 30 percent of all vehicles be electric by 2050 would both reduce U.S. oil use by 2.5 million barrels a day."[12]

Barriers to EV Development

The major barriers preventing EVs from entering commercial markets are associated with the cost, performance, and life of batteries; the lack of charging infrastructure; and the lack of market acceptance regarding EV technology. It is expected that these hurdles will eventually be overcome, but maybe not for quite some time. Batteries must be improved and mass produced before costs can be lowered; the necessary charging infrastructure must be implemented to reduce range anxiety; and greater efforts must be made among automobile manufacturers to develop attractive and appealing EVs.

One of the major issues which will determine the level of acceptance for EVs is the ability to recharge them as needed. Nationally, 78% of U.S. residents travel less than 40 miles per day[13]. In Indianapolis, the average round-trip commute is 45-50 miles[14]. This would indicate that an EV should allow for most trips to be made without needing to recharge except at night. The implication is that owners will generally recharge their vehicles at home. The table below describes the characteristics of the different levels of EV charging.

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[9] *See*, Environmental Protection Agency, *Inventory Of U.S. Greenhouse Gas Emissions And Sinks: 1990-2008,* March 2010.
[10] *See*, Research Reports International, "The Impact of Plug-in Hybrid Electric Vehicles on the Electric Industry," May 2010 (3rd Ed.).
[11] *Id*.
[12] Baker Institute for Public Policy at Rice University, *Energy Market Consequences of an Emerging U.S. Carbon Management Policy."* September 2010. Press release available at: http://www.media.rice.edu/media/NewsBot.asp?MODE=VIEW&ID=14798
[13] U.S. Department of Transportation, Bureau of Transportation Statistics. OmniStats. Volume 3, Issue 4, October 2003.
[14] Roland Berger Strategy Consultants in collaboration with Rocky Mountain Institute and Project Get Ready. *PEV Readiness Study, p. 15.* Fall 2010.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Type	Power Level	Vehicles	Time Required for Full Charge (depends on battery size)[15]
Level 1 120 VAC	1.2 – 2.0 kW 1.4 kW typical	PHEV, EV	24 kWh => 16-18 hours 16-16.5 kWh => 10-12 hours
Level 2 240 VAC	3 - 19 kW 3.3 kW or 6.6 kW typical	PHEV, EV	24 kWh => 8-10 hours 16-16.5 kWh => 4-6 hours
Level 3 480 VAC or High Voltage DC	50 kW – 200kW +	EV	Less than 30 minutes

Table 1: EV Charging Level Statistics

However, not everyone has the ability to charge at their residence. Many people live in urban areas where they must park on the street a distance from their home. Others live in apartments with large parking lots that may be far from outlets. Charging at office buildings, hotels, or parking lots may not be available. Currently there is no wide-scale charging infrastructure available for EVs. Public chargers would allow EV batteries to be charged anywhere the vehicle is parked and not in use.

Market acceptance is another barrier. Although there has been some commercial success with HEVs, the public has not yet embraced EV technology. The major issue is the high cost of EVs due to expensive batteries, but there may also be some reluctance to having a vehicle that must be plugged in to charge the battery. In fact, auto manufacturers decided to introduce HEVs before introducing EVs so that consumers could first become acquainted with the benefits of an electric vehicle that did not have to be plugged in.

Issues for Electric Utilities; Need for Special EV Rates

EVs are an important piece of the Smart Grid projects being implemented across the country by utilities. With their energy storage, two-way communications, and self-metering and diagnostics capabilities, EVs are the consummate "smart appliance." The Smart Grid projects and EVs will be complementary in their abilities to demonstrate the full value of the other's technology.

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[15] The Nissan Leaf and Think City EVs have 24 kWh batteries. The Chevy Volt PHEV has an 16 kWh battery. The Smart ForTwo EV has a 16.5 kWh battery.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

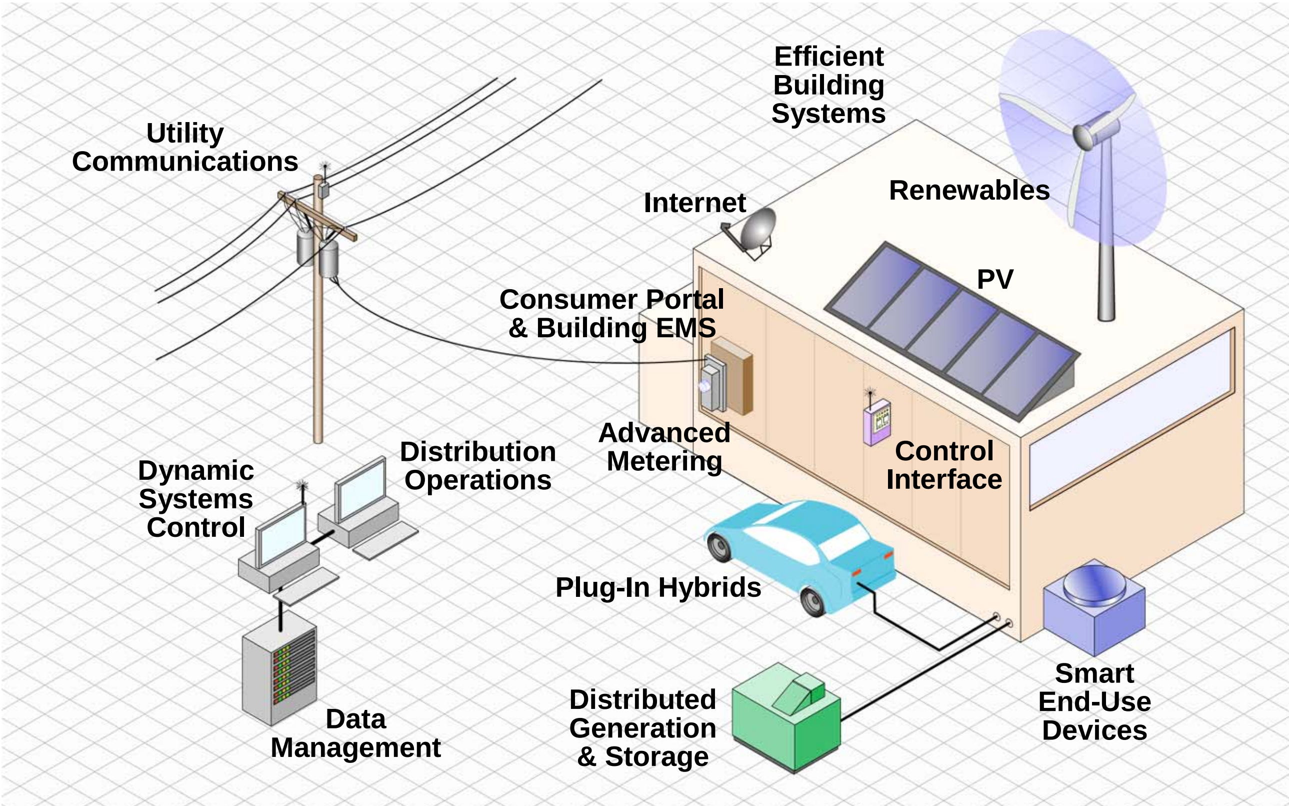

Figure 1: EVs and the Smart Grid

Given that EVs will derive their energy from electricity, it is likely that these vehicles will have a significant impact on the grid in the future. Large-scale penetration of EVs would mark a major shift in the use of electricity. Adding EVs to the grid as new load could potentially worsen the problems already faced by the grid, including constrained transmission lines, demand outstripping supply, and high peak prices. Depending on when, where, and how EVs are operated, they could introduce regional or local constraints to the existing grid. Remedying this situation could require construction of new generating and T&D capacity. The inability of capacity to keep up with demand if market penetration of EVs happens rapidly could reduce reserve margins and negatively impact system reliability at both the regional and local level.

However, EVs will not impact the grid much until they reach a substantial level of market penetration. While most in the industry are concerned about EVs having a negative impact on the grid because of increased load, they may in fact be able to strengthen the grid by acting as distributed energy resources providing peak power or ancillary services through “vehicle-to-grid” (“V2G”) technology. V2G supports two-way communications allowing utilities to interact with PHEVs and cooperate on charging or discharging batteries based on system conditions. With a significant number of EVs on the road, this could prove to be a significant new source of energy or capacity without requiring investment in new peaking plants. V2G technology is still being tested to prove its viability and to test the impacts on the battery systems.

As the market penetration of EVs increases, transportation-based emissions will shift away from tailpipes and towards power plants. Taking into account the greater efficiency of electric drives over

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

ICE, this by itself will reduce emissions. Unfortunately, while overall emissions will go down, power plant emissions will necessarily go up. This could be problematic for utilities faced with emissions caps. What emissions and by how much they will increase will be dependent on the generation mix of particular utilities or regions, as well as the characteristics of EV charging.

A number of studies have been performed to determine the impact of EVs on the electric industry. On a positive note, most of the studies have come to very similar conclusions regarding the impact of EVs on the industry – in particular, if EV charging is controlled by the utility, directly or indirectly through rate structures, the impact on generation and T&D system needs should be minimal. More specifically, studies performed by the National Renewable Energy Laboratory (NREL) the Pacific Northwest National Laboratory (PNNL), and the Oak Ridge National Laboratory (ORNL) support the conclusion that uncontrolled charging would increase peak demand and require new generation and transmission investments, while delayed or off-peak charging would have minimal impacts on generation and transmission needs.[16]

[16] *See*, K. Parks, et.al., NREL, *Costs and Emissions Associated with Plug-In Hybrid Electric Vehicle Charging in the Xcel Energy Colorado Service Territory*, May 2007; *see also*, Pacific Northwest National Laboratory, *Potential Impacts of High Penetration of Plug-in Hybrid Vehicles on the U.S. Power Grid*, June 2007; *see also*, Stanton Hadley, ORNL, *Impact of Plug-in Hybrid Vehicles on the Electric Grid*, October 2006.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

RATE EVX
EXPERIMENTAL TIME OF USE SERVICE
FOR ELECTRIC VEHICLE CHARGING ON CUSTOMER PREMISES

AVAILABILITY:
Available to Customers concurrently served under any of the following retail electric rates: Rate RS, Rate SS, Rate SH, or Rate SL, exclusively for charging of such Customers' licensed electric vehicles (EVs) using electricity provided by the Company at locations on such Customers' premises within the Company's assigned utility service area. Participation is voluntary. Energy consumption metered and billed under this tariff shall be used exclusively for charging electric vehicles.

The Company reserves the right to periodically interrupt service to test demand response strategies and system results. The Company does not anticipate receiving demand response revenues or providing monetary credits to Customers at this time.

EQUIPMENT:
For the first 150 eligible Customers who take service under this rate, the Company will procure, pay for, install, own, and maintain: (1) Level 2 (120/240 volt) EV charging equipment (limited to one (1) unit per residential Customer) and (2) any separate metering equipment required to participate.

Service under this rate must be supplied through a separately metered circuit. Company installation will include a dedicated 40 amp circuit and up to a 30 ft. run between the Customer's electrical panel and the EV charging equipment, which will become Customer's property upon installation. Customers agree to install and maintain any additional necessary equipment. Such installations must conform to current National Electric Code (NEC) specifications. Charging may only be accomplished using an SAE approved J1772 plug.

For additional eligible Customers who take service under this rate, the Company will procure, pay for, install, own, and maintain any separate metering equipment required to participate. Customers shall be responsible for procuring, paying for, installing, and owning the EV charging equipment, a dedicated 40 amp circuit, and any additional necessary equipment. Customer procured EV charging equipment must meet UL listing standards.

If, prior to the conclusion of a twelve (12) month period on this rate, the Customer requests that the Company remove the EV charging equipment and any separate metering equipment, the Customer shall pay a removal fee of $100, to reimburse the Company for all costs associated with removal of such equipment.

If, during the term of this rate, the Customer requests removal and relocation of the charging equipment and meter within the Company's service territory, the Customer shall pay all costs associated with removal and relocation of the charging equipment.

METERING AND BILLING:
EV charging service will be separately metered and identified on the bill in accordance with the Company's applicable rate schedule. Should interval gaps occur, consumption will be billed at the appropriate off-peak rate.

CHARACTER OF SERVICE:
Sixty cycle alternating current energy, ordinarily delivered and measured at 120/240 volts single phase three wire, 120/240 volts three phase four wire, or 120/208 volts three phase four wire, at the option of the Company.

RATE:
The Energy Charge shown hereafter plus the Fuel Cost Adjustment, the Environment Compliance Cost Recovery Adjustment, and the Core and Core Plus Demand-Side Management Adjustment calculated in accordance with Rider No. 6, Rider No. 20 and Rider No. 22, respectively.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Energy Charge June through September (Summer Months)

For all Peak kWh	12.150¢ per kWh
For all Mid-Peak kWh	5.507¢ per kWh
For all Off-Peak kWh	2.331¢ per kWh

Summer Months

	Peak	Mid-Peak	Off-Peak
Non-Holiday Weekdays (Monday—Friday)	2 p.m. to 7 p.m.	10 a.m. to 2 p.m. 7 p.m. to 10 p.m.	Midnight to 10 a.m. 10 p.m. to Midnight
Weekends and Observed Holidays*	N/A	10 a.m. to 10 p.m.	Midnight to 10 a.m. 10 p.m. to Midnight

*Observed Holidays include: Independence Day and Labor Day

Energy Charge January through May & October through December (Non-Summer Months)

For all Peak kWh	6.910¢ per kWh
For all Off-Peak kWh	2.764¢ per kWh

Non-Summer Months

	Peak	Off-Peak
All Days	8 a.m. to 8 p.m.	Midnight to 8 a.m. 8 p.m. to Midnight

PARTICIPATING CUSTOMER OBLIGATIONS: In addition to Customer obligations outlined in the Company's Rules and Regulations for Electric Service and in the Rules and Standards of Service for the Electrical Public Utilities of Indiana prescribed by the Indiana Utility Regulatory Commission, as the same are now in effect, and as they may be changed from time to time hereafter, Customers taking service under this rate shall:

(1) Supply the Company with suitable locations for installation of metering and other necessary equipment;
(2) Provide sufficient access to their premises to install metering and other necessary equipment;
(3) Be responsible for (and indemnify and hold the Company harmless with respect to) the adequacy, condition and operation of electrical wiring and electrical system on Customer premises, and ensure that such wiring and system meet, at a minimum, the provisions of the NEC, the governmental authorities having jurisdiction, and the reasonable requirements of the Company; and
(4) Take responsibility for (and indemnify and hold the Company harmless with respect to) the adequacy, condition and operation of Customer-owned EV charging equipment.

STANDARD CONTRACT RIDERS APPLICABLE:

No. 1	see Page 150
No. 6	see Page 157
No. 7	see Page 159
No. 9	see Page 161

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

No. 20	see Page 179.2
No. 21	see Page 179.3
No. 22	see Page 179.5

PAYMENT:
The above rates and charges are net. If the net bill is not paid within seventeen (17) days after its date of issue, a collection charge will be added in the amount of ten percent (10%) of the first Three Dollars ($3.00) plus three percent (3%) of the excess over Three Dollars ($3.00).

TERM:
The anticipated term for this rate is approximately two years beginning with the date of approval by the Commission. Participating Customers shall be required to participate for a minimum term equal to the shorter of twelve (12) months, or through the end of the term. Until it is terminated or superseded by a new rate approved by the Indiana Utility Regulatory Commission, this rate will remain in effect beyond the end of the term.

RULES:
Service hereunder shall be subject to the Company's Rules and Regulations for Electric Service, and to the Rules and Standards of Service for the Electrical Public Utilities of Indiana prescribed by the Indiana Utility Regulatory Commission, as the same are now in effect, and as they may be changed from time to time hereafter.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Assessment of Time-Based Pricing at Indianapolis Power and Light: *Supplemental Report*

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October 1, 2010

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Table of Contents

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

1. INTRODUCTION

This report describes an assessment of several time-based pricing products that Indianapolis Power and Light (IPL) is considering offering to its residential consumers[1], including critical peak pricing (CPP), peak-time rebate (PTR), and a Smart Grid TOU rate for separately metered electric appliances. A previous report focused on the design and assessment of a residential summer time-of-use (TOU) rate. This supplemental report uses the same underlying data as the previous report (2008 data on hourly marginal energy costs and hourly load research data for residential customers without electric space or water heating), but extends the analysis to the additional rate designs.

This report is organized as follows. Section 2 describes the Smart Grid TOU appliance rate. Section 3 contains the design and evaluation of the CPP and PTR programs. Section 4 offers conclusions and recommendations.

2. SMART GRID APPLIANCE RATE DESIGN

In the previous study, we designed a summer-only TOU rate to be offered to residential customers who do not have electric space or water heating (labeled "RS" customers by IPL). In addition to this rate, IPL requested an annual TOU rate design that could be used for separately metered electric appliances.

The goals of the rate were to keep the peak to off-peak ratio high enough to encourage customers to shift usage to off-peak hours; to have an off-peak period that was sufficiently long for some of the likely applications for the rate (*e.g.*, electric vehicle recharging); and to base the energy prices on market-based price signals (marginal energy costs) to the extent possible.

Patterns in the marginal energy costs dictated some of the rate design. Because hourly patterns in market marginal energy costs differ substantially by the time of the year, we established two TOU pricing seasons, where summer is defined as June through September and winter (non-summer) is defined as October through May. The separation of seasons provided two benefits: it allowed the summer TOU rates to properly reflect the relatively high peak to off-peak price ratio in those months; and it allowed us to establish TOU pricing period definitions (*i.e.*, the hours to which the prices apply) more appropriately for each season. Table 2.1 contains the pricing period definitions by season. The summer periods are the same as in the previous report. The winter off-peak period has been set to be twelve hours in duration (8 p.m. to 8 a.m.) to ensure that it is long enough and begins early enough in the evening to accommodate electric vehicle charging.

[1] The Smart Grid TOU rate may be offered to commercial and industrial customers as well.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Table 2.1: Smart Grid TOU Appliance Rate Pricing Periods

Pricing Period	Summer Hours	Non-summer Hours
Peak	2 p.m. to 7 p.m. on non-holiday weekdays	8 a.m. to 8 p.m., all days
Mid-peak	10 a.m. to 2 p.m. & 7 p.m. to 10 p.m. on non-holiday weekdays; and 10 a.m. to 10 p.m. on weekends and holidays	n/a
Off-peak	All other hours	All other hours

An additional issue that emerged from the data was that the peak to off-peak ratio of the observed 2008 market marginal costs during the non-summer months was quite low (1.29 to 1). If this ratio were applied to retail TOU rates, it would likely not be high enough to induce customers to shift load from peak to off-peak hours. In order to ensure that customers would have an incentive to shift load, we inflated the peak to off-peak price ratio in non-summer months to 2.5 to 1.

Finally, our initial report did not take into account one feature of the 2008 market marginal costs: the fact that they do not incorporate capacity costs. For this report, IPL provided forecasts of avoided capacity cost values (in $ per kW-year). The prices are forecast to be quite low for the next couple of years (*e.g.*, $10 per kW-year in 2012), but rise considerably beginning in 2013, exceeding $80 per kWh-year by 2016. Because the Smart Grid TOU rate may be in place for a number of years, we believed that it would be reasonable to use an intermediate avoided capacity cost to design the rate, and we selected $45 per kW-year (the forecast avoided capacity cost for 2014).

We allocated the avoided capacity cost to all hours in which the demand exceeded 95 percent of the annual maximum demand. This resulted in 51 hours being allocated capacity costs (43 hours in summer, 8 hours in non-summer), which added 88.24 cents per kWh to the marginal costs in those hours (88.24 cents per kWh equals $45 per kW year divided by 51 hours). The market marginal energy costs with allocated avoided capacity costs served as the basis for the final price ratios across the pricing periods (with the winter price ratio set to be 2.5 to 1 as described above).

The rate level was then set to be revenue neutral for the residential customer class, assuming usage shares for each TOU pricing period derived from the 2008 load research sample. Note that this form of "revenue neutrality" is somewhat unconventional, in that the load profile expected to be served under this rate is not likely to resemble "standard" residential load profiles. However, we do not know the load profile that this rate will serve; and even if we did, it would not be advisable to design the rates to be revenue neutral to that load profile. For example, if the load profile consisted entirely of overnight charging load, revenue neutrality to this profile (relative to the residential rates) would have the effect of raising the off-peak rate, removing the incentive for the customer to adopt the Smart Grid TOU rate. Therefore, we consider the revenue neutrality concept employed in the Smart Grid TOU rate design as a method to bring the rates up to embedded, regulated levels as opposed to market marginal cost levels.

Table 2.2 shows the rates by pricing period that resulted from the methods described above.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Table 2.2: Smart Grid TOU Appliance Rates

Pricing Period	Summer Rates	Non-Summer Rates
Peak	12.150 cents/kWh	6.910 cents/kWh
Mid-peak	5.507 cents/kWh	n/a
Off-peak	2.331 cents/kWh	2.764 cents/kWh

3. CRITICAL PEAK PRICING AND PEAK-TIME REBATE PROGRAMS

While TOU prices differentiate between average generation costs during peak and off-peak periods, they cannot differentiate between days on which energy costs are relatively *low* from the occurrence of days with unusually *high* energy costs. These are the days on which consumer demand response is most valuable.

CPP (sometimes call peak day pricing, or PDP) has been offered as a way to improve the accuracy of either standard rates or TOU pricing, by giving customers a price signal on critical days that reflects expected peak-period energy costs on those days. It thus gives customers an incentive to reduce consumption in the highest-cost hours. Under CPP, normally fixed prices may be increased temporarily, on short notice, to a pre-established critical value whenever wholesale prices rise above, or reserve capacity falls below established critical values. In return, normal prices are discounted to reflect a reduced need to recover unusually high costs on non-critical days, and to maintain revenue neutrality at base usage levels. Critical days may be defined by load levels, operating reserve levels, wholesale price levels, or ambient temperature.

CPP designs typically place a limit on customers' price risk. Specifically, the number of CPP events or hours per year is typically capped at a maximum level (*e.g.*, fifteen events, consisting of five hours each, or 75 hours per year), with pre-specified CPP prices that are announced in advance. CPP prices may in principle be designed to have more than one fixed level, such as "critical" and "super-critical." Such enhancements would add pricing accuracy, but at the expense of simplicity. Depending on the design, consumers receive notice on the previous day or a few hours before a critical event.

CPP has generally been tested in conjunction with an underlying TOU rate. In this form, implementing a voluntary CPP rate requires simultaneously implementing a TOU rate. CPP could alternatively be appended to a standard flat, seasonal, or blocked tariff, with the critical price applying only during specified hours on critical days.

An alternative version of this form of CPP pricing that has been tested by several utilities is to offer a voluntary critical-day credit payment, or peak-time rebate (PTR) to consumers for load reductions below a baseline usage level that represents an estimate of their normal consumption during the critical period on that day. That is, customers enrolled in CPP are charged critical prices on event days and receive a discount on non-event days. Alternatively, customers enrolled in a PTR program continue to pay their normal rates, even on event days, but have the *option* of reducing usage during event hours in order to receive a credit for load reductions below a baseline level. Recent

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

pricing experiments have found that customers' load reductions during event hours are often quite similar for both CPP and PTR designs.

3.1 CPP Design

Our assessment of CPP in this project leveraged off of our RS TOU design (*i.e.*, for residential customers without electric space or water heating) described in the previous report. Because forward prices for the next few years are relatively low, we designed two levels of critical prices. The lower level corresponds to price levels that are likely to be observed in the coming years. The higher level corresponds to prices that would be observed only in extreme conditions, and would reflect marginal capacity costs as well as energy costs, as discussed below. Although these prices are unlikely to be charged in the near future, it is useful to include them in the tariff to ensure that the program continues to be relevant as market conditions change, and because many of the recent pilot programs have employed such higher CPP prices, with values in the range of $0.75 to $1.00 per kWh, or larger.

In addition to setting the critical prices, we set the discount on the TOU peak price that reflects the fact that it no longer applies on the highest-cost days. That is, on the standard TOU rate, the peak price is charged on all days, regardless of conditions. Under CPP, the non-critical peak price will be charged on all but the most costly days. Because of this, the peak rate should be discounted relative to the standard TOU peak price.

Once we set the CPP rates, we conducted two types of evaluations using the RS load research sample. In the first, we calculated customer-level load impacts under the assumption that customers move from the summer TOU rate to the CPP rate. In the second analysis, we simulated the demand response that may be expected to occur on critical days. We assumed two levels of customer demand responsiveness: with and without enabling technology, where the enabling technology increases the customer's demand response.

Rate Design Issues

The fundamental concept of CPP pricing is that the critical prices reflect the occurrence of a "critical" energy cost or reliability condition in the relevant wholesale market, such as one in which operating reserves are expected to fall below planned levels and wholesale energy prices rise to reflect marginal reliability, or outage costs in addition to the energy costs of the highest-cost generating units. Under these conditions, load reductions induced by CPP produce both energy cost savings and potential capacity cost savings from reducing the need for additional generating capacity that would otherwise be needed to meet non-responsive load. Such critical events are uncertain; there may be no critical events in some years, but several in other years. Conducting a comprehensive assessment of CPP would require a multi-scenario approach that accounts for a variety of possible market scenarios and their probabilities of occurrence.

For this project, we conducted an assessment based on 2008 loads and wholesale market conditions. It is useful to use this year because of the price variation that occurred across days and hours.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

As stated above, we use the standard TOU rate for RS customers as our starting point for the CPP rate. On event days, the CPP rate replaces the peak-period TOU rate with one of two critical prices.[2] In exchange for the potential for occasional higher prices, the peak-period price on non-critical days is discounted relative to the standard TOU rate. Therefore, two rate design factors needed to be set: the percentage discount to the standard TOU peak price; and the ratio of the critical price to the non-critical peak price.

To set these parameters, we selected 12 high-cost days (measured as the average marginal cost during the CPP event hours, 2 p.m. through 7 p.m.) to serve as proxy event days. This is a reasonable number of event days relative to the number of allowed days on other programs. For example, the Peak Day Pricing program offered by Pacific Gas and Electric Company (PG&E) allows for a minimum of 9 and a maximum of 15 event days. We then calculated the load-weighted marginal cost (using an RS load profile derived from the load research sample, appropriately weighted) for each pricing period, including the off-peak, mid-peak, and peak pricing periods for the standard TOU rate and the CPP rate, and the critical hours of the CPP rate.

We then calculated the percentage difference between the load-weighted average of marginal costs in the non-critical day peak hours (which exclude the critical hours) and the TOU peak hours, and found that costs were 16.7 percent lower during the non-CPP day peak hours (relative to including all TOU peak hours).

To set the lower critical price, we calculated the ratio of the load-weighted average marginal costs during the CPP critical hours to the non-critical day peak hours, which produced a result of 2.12.

These two values were used to set the CPP rates. Specifically, the non-critical day peak price was set by multiplying the standard TOU peak price of 8.794 cents per kWh by (1 – 0.163), which yields 7.325 cents per kWh. The lower critical price was calculated by multiplying 7.325 cents per kWh by 2.12, producing a price of 15.530 cents per kWh.

The alternative higher critical price was designed to represent a scenario in which load reductions during critical periods can avoid some level of capacity costs in addition to energy costs (for example, DR load reductions can receive credits toward resource adequacy requirements at a value that reflects capacity market prices, which in turn reflect the annualized cost of a new combustion turbine peaking generator, less an estimate of the revenue that the generator would presumably return). Estimates of these costs range from approximately $40 to $80 per kW-year. Dividing this cost by the assumed number of CPP event hours (*e.g.*, 60 to 90) produces a CPP price that would recover those costs. For purposes of this study, we set the price at 80 cents per kWh.

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[2] The second, higher critical price is set at a higher level than is observed in historical or forward data, so the analysis of 2008 data is used only to set the lower critical price and the corresponding discount to the non-critical day peak price.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

For the case of PTR, we assumed that the rebate level was set to equal the high CPP price, under an assumption that customers would be billed for their estimated baseline load at their otherwise applicable tariff (*e.g.*, their standard tariff or the TOU rate) during PTR events, and then receive a rebate for their load reductions relative to the baseline.[3]

The resulting CPP rates are summarized in Table 3.1. The standard TOU rates are included for comparison purposes. For simplicity, we assume that the PTR option is applied to customers on the TOU rate. In this way, the estimated load reductions will be the same as the estimated CPP load reductions due to the similar price signal.

Table 3.1: CPP Rates and Time Period Definitions

Pricing Period	Hours	CPP Rate	TOU Rate
Super-critical	2 p.m. to 7 p.m. on non-holiday weekdays, as called day-ahead	80 ¢/kWh	n/a
Critical	2 p.m. to 7 p.m. on non-holiday weekdays, as called day-ahead	15.530 ¢/kWh	n/a
Peak	2 p.m. to 7 p.m. on non-holiday weekdays	7.325 ¢/kWh	8.794 ¢/kWh
Mid-peak (shoulder)	10 a.m. to 2 p.m. & 7 p.m. to 10 p.m. on non-holiday weekdays; and 10 a.m. to 10 p.m. on weekends and holidays	6.119 ¢/kWh	6.119 ¢/kWh
Off-peak	All other hours	2.948 ¢/kWh	2.948 ¢/kWh

3.2 CPP Bill Impacts

We evaluated the CPP bill impacts relative to the standard TOU rate. For this section, we evaluated the "instant" bill impact for each customer in the RS load research sample. That is, the bill for each rate is calculated assuming the load profile as it was originally observed, without accounting for customer response to the different price signals. In the next section, we simulate customer load response.

Figure 3.1 illustrates the customer-level bill impacts expressed as a percentage change from the bill under TOU to the bill under CPP. The bill impacts are graphed as a scatter plot against average monthly usage. Notice that the bill impacts are not highly correlated with customer size (which was not the case when we analyzed bill impacts for the summer TOU rate vs. the current residential rates in the previous report), though the handful of largest customers all experience bill reductions on CPP versus TOU.

Most importantly, these results show that the incremental bill impact (*i.e.*, beyond the impact from migrating from RS to TOU) associated with CPP is relatively small. Of the 105 available load profiles, 65 experienced a bill impact of less than 0.5 percent (positive

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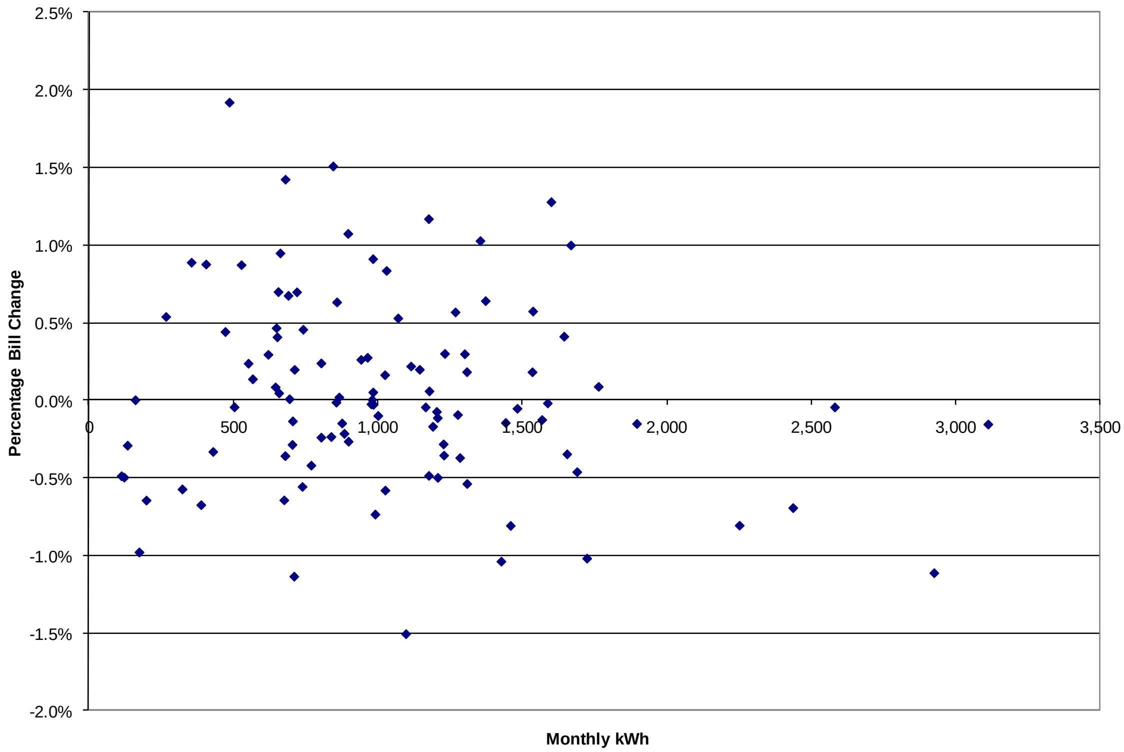
[3] This formulation is equivalent to having PTR customers pay for their *observed* consumption during PTR periods at their otherwise applicable tariff, and then receive a PTR rebate equal to the high CPP price less their retail rate for the load reduction.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

or negative); and all but three profiles experienced a bill impact of less than 1.5 percent (in absolute value). The largest bill impact was 1.9 percent.

Figure 3.1: Customer-level bill impacts, CPP versus TOU



3.3 CPP Load Response

As in the previous report on the residential summer TOU rate, we simulated customer load response to the CPP rate using assumed values for the elasticity of substitution (which represents the extent to which customers shift usage from one time period to another) and the daily elasticity (which represents how customers change their overall usage level in response to changes in the average electricity price). For the CPP and PTR rates, we focused on simulating demand response on event days. Event-day simulations were conducted for the following scenarios:

- At the critical and super-critical prices;
- With and without enabling technology; and
- Relative to the RS rate, the TOU rate, and the CPP non-critical day peak rate.

The critical and super-critical CPP prices were set at 15.53 and 80 cents per kWh, respectively. The presence of enabling technology is represented by increasing the assumed elasticity of substitution (ε_S). The "baseline" value of ε_S is 0.10, which represents the degree of load response in the absence of enabling technology. A value of 0.20 is used to represent load response with enabling technology. This value reflects findings from recent CPP pilot studies that report percentage peak demand reductions with enabling technology that are typically estimated to be approximately twice as great (*e.g.*, 30 to 40 percent reductions) than without such technology (*e.g.*, 15 to 20 percent).

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

When applying the elasticity of substitution model, the amount of load response is directly proportional to the change in the *ratio* of relevant prices. For example, since the standard RS rate does not have a time-based element, the ratio of the peak to off-peak prices is 1.0. In contrast, on CPP event days, the ratio of peak to off-peak prices can be quite high. When $\varepsilon_s = 0.10$, a doubling (*i.e.*, 100 percent increase) of the peak to off-peak price ratio reduces the ratio of peak to off-peak *usage* by 10 percent.

A reported percentage change in load during critical hours is therefore affected by the starting point, or the rate that is being used as the basis of comparison. We have evaluated peak load impacts relative to three alternative base rates: RS, TOU and CPP on non-critical days (where the peak price has been discounted relative to the TOU peak price).

Table 3.2 shows percentage load reduction in the critical peak period relative to each of the comparison rates for the four price and technology scenarios. For example, the second row shows that at the super-critical price under an assumption of no enabling technology, simulated load reductions during critical hours are 25.3 percent relative to load under the RS rate, 20.6 percent relative to load under the TOU rate, and 21.9 percent relative to load on CPP non-event days. (The somewhat larger load reduction in the latter case reflects a somewhat higher peak load on non-CPP event days due to the discounted peak price relative to the TOU peak price.)

Table 3.2: Residential Customer Load Reductions during Critical Hours

Enabling Technology?	**Critical Price**	**Comparison Rate for Load Changes**		
		RS	**TOU**	**CPP Non-Critical Day**
No ($\varepsilon_s = 0.10$)	15.53 ¢/kWh	-10.8%	-5.3%	-6.9%
No ($\varepsilon_s = 0.10$)	80 ¢/kWh	-25.3%	-20.6%	-21.9%
Yes ($\varepsilon_s = 0.20$)	15.53 ¢/kWh	-18.5%	-9.0%	-11.7%
Yes ($\varepsilon_s = 0.20$)	80 ¢/kWh	-39.9%	-32.5%	-34.6%

Notice that percentage load impacts are highest when the RS rate is used as the basis of comparison. This is because the RS rate does not contain any time-based element, so the critical days introduce a very large peak to off-peak price ratio where none had previously existed.

As expected, introducing enabling technology (by assuming a higher elasticity) and/or applying the higher critical price produce significant increases in the simulated percentage load impact. To provide some scale to the results, consider an example in which all RS customers were placed on CPP, and we assume that no enabling technology

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IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

is present. For an event day on which the lower critical price is called, the total load reduction would be approximately 42 MW (relative to RS usage levels).[4]

Figures 3.2a through 3.2d illustrate the hourly load response for typical event days for four of the scenarios. In each case, the load response is illustrated against the historical RS loads. The scenarios vary according to the level of the critical price (15.53 versus 80 cents per kWh) and the presence of enabling technology. In addition to the load reductions during the critical hours, notice that load *increases* occur in the off-peak hours and smaller load reductions occur in the shoulder hours.

[4] The average load impact across event hours is 0.17 kW per customer per hour. Assuming 250,000 RS customers produces the total load impact of approximately 42 MW. For the RS load research sample, the average load during the event hours of the assumed critical days (the 12 highest-priced days in 2008) is 2.46 kW per customer per hour.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

Figure 3.2a: Customer-level load response – CPP event day versus non-event day (without enabling technology; 15.53 ¢/kWh critical price)

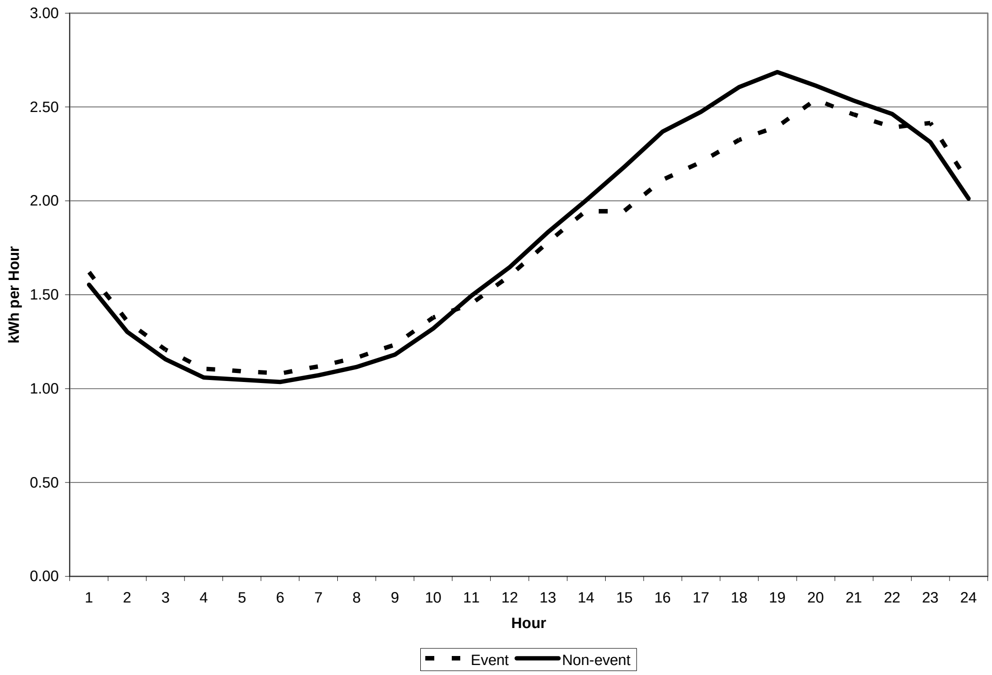

Figure 3.2b: Customer-level load response – CPP event day versus non-event day (without enabling technology; 80 ¢/kWh critical price)

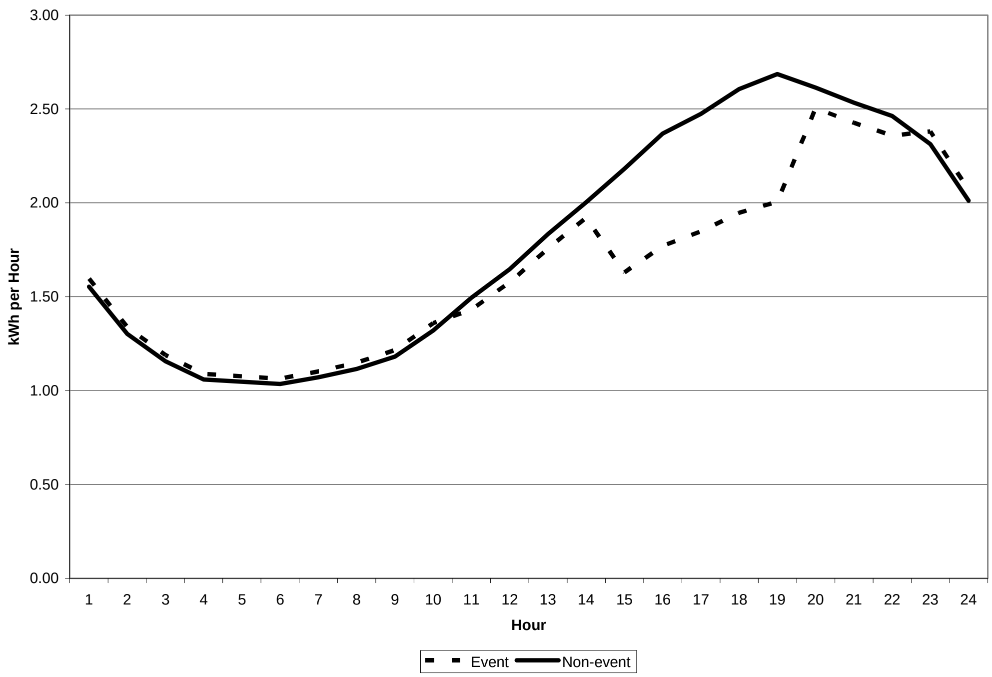

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Figure 3.2c: Customer-level load response – CPP event day versus non-event day (with enabling technology; 15.53 ¢/kWh critical price)

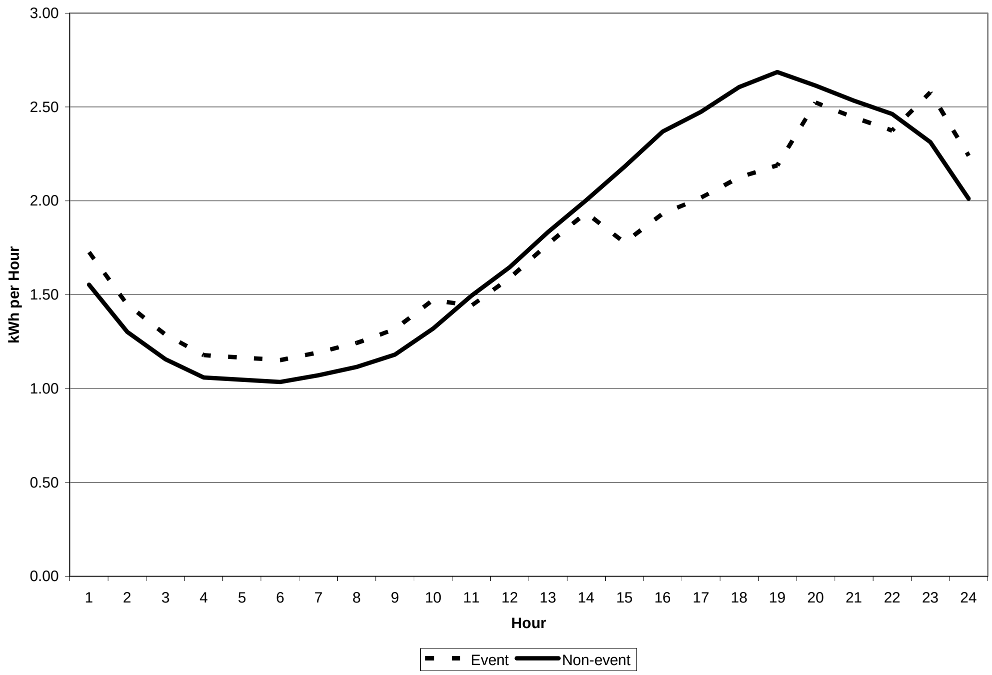
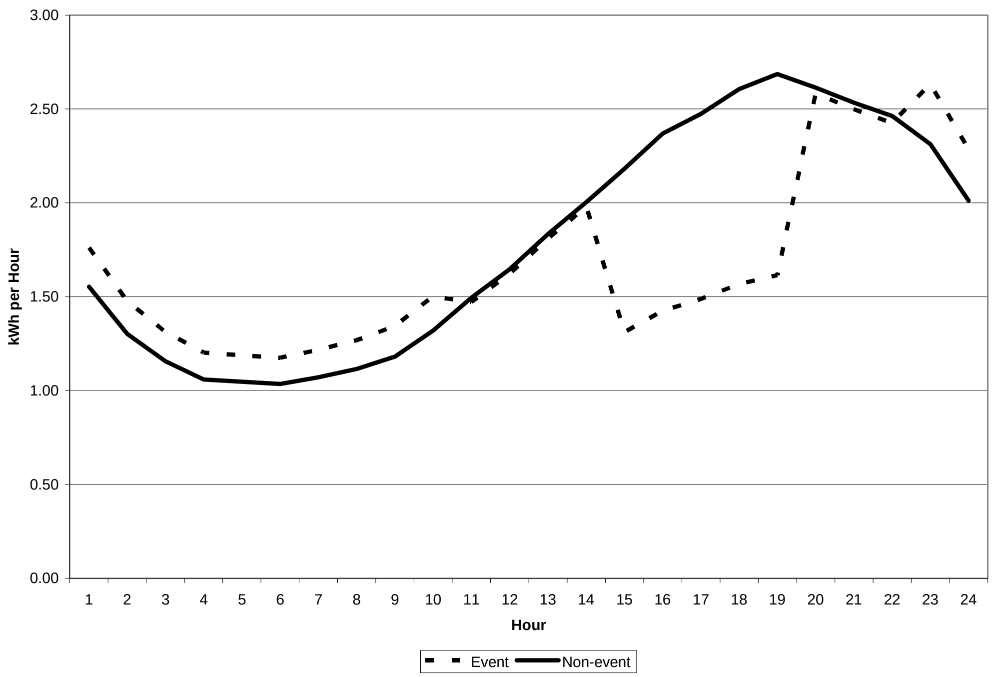


Figure 3.2d: Customer-level load response – CPP event day versus non-event day (with enabling technology; 80 ¢/kWh critical price)



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Indiana Utility Regulatory Commission

3.4 Peak-Time Rebate Results

Under CPP, enrolled customers pay the critical price during event hours for all metered usage. Therefore, customers may experience adverse bill impacts under CPP if they are unable to avoid using energy during critical hours. Peak-time rebate (PTR) programs are an attempt to obtain load reductions during high-cost hours without penalizing enrolled customers.

Under PTR, enrolled customers have the option to reduce their load during event hours in exchange for credits. Customers are not penalized for failing to reduce load during event hours. This "carrot-only" approach may lead to increased participation rates relative to CPP because a customer's bill cannot increase because of PTR provisions.

The disadvantage of PTR relative to CPP is that the utility must calculate a "baseline" load level relative to which load changes are measured. The baseline represents the amount of energy that the customer would have consumed in the absence of the event. For example, a utility may take the average usage during the peak hours in the highest 3 of the previous 10 days that could have been event days (*e.g.*, non-holiday weekdays), but were not. However, there is no "perfect" method of calculating the baseline load, which introduces the potential for two types of errors in program incentive payments: customers who actually reduced load may not be paid the incentive because their estimated baseline load was too low compared to their actual load; or customers who did not take actions to reduce load may be paid the incentive because their baseline load was too high.

Previous studies have shown that customer load response to PTR programs is often similar to the load response to CPP programs. For example, a 2009 study of Baltimore Gas & Electric Company's Smart Energy Pricing Pilot found that estimated price elasticities under CPP and PTR were not statistically different from one another. This pilot used a formal experimental design (*i.e.*, with control groups and experimental groups) to test customer response to a variety of rate designs.

Because of these findings, we do not separately evaluate PTR load response in this report. Instead, we note that, from a load response perspective, a PTR program can be developed that is equivalent to a given CPP rate design. That is, during a PTR event, a participating customer is paid the rebate (*e.g.*, 80 cents per kWh) for load reductions relative to the baseline load, and obtains the benefit of a reduced bill. In the case of CPP, the customer simply pays the critical price during the event hours. We would expect that load reductions under PTR would be similar to those under a comparable CPP rate.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

In this report, we designed and analyzed a variety of time-based rates, including time-of-use (TOU) and critical peak pricing (CPP) rates. For the CPP rate, load impacts were calculated from the RS (residential customers without electric space or water heating) load research sample. The results showed that the bill impacts relative to a summer TOU rate were relatively small, with most of the CPP bills within 1 percent of the TOU bill.

RECEIVED ON: DECEMBER 10, 2010
IURC 30-DAY FILING NO.: 2786
Indiana Utility Regulatory Commission

The bill impacts were not related to the size of the customer (measured by average monthly usage).

In addition to calculating bill impacts, we simulated load responses that would result from a change in the rate structure to a CPP rate. The load reductions during critical hours were evaluated under a variety of scenarios (based on the level of the critical price, the presence of enabling technology, and the base rate against which load impacts are compared), with percentage peak load reductions varying from 5 to 40 percent. One scenario in which a relatively low critical price is charged to all RS customers would result in an aggregate load reduction of approximately 42 MW.

One factor that will limit the ability of IPL to take full advantage of time-based pricing in the near future is the expectation of low Midwest Independent System Operator (MISO) prices in the near future. In particular, the high prices charged in some CPP programs in the United States (*e.g.*, over $1 per kWh California) are not expected to be relevant in IPL's service territory. We have resolved this issue in this study by designing a CPP program with two critical prices: a relatively low critical price (15.53 cents per kWh) that may be relevant in the near future; and a high critical price (80 cents per kWh) that would only be relevant if system conditions changed significantly relative to expectations. The presence of the higher critical price helps ensure that the program will continue be relevant as conditions change.

4.2 Recommendations

As noted above, market marginal costs of energy are expected to be low in the near future, reducing the immediate need for time-based pricing. This time can also be viewed as an opportunity to test rate designs that can then be refined and in place when the need arises. We recommend that IPL take advantage of this time to implement pilot programs accordingly.

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IURC 30-DAY FILING NO.: 2786
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Verified Statement of Indianapolis Power & Light Company (IPL)

Concerning Notification of Customers Affected by the Experimental Time of Use Service for Electric Vehicle Charging on Customer Premises

Indianapolis Power & Light Company complied with the Notice Requirements under 170 IAC 1-6-6 in the following manner:

- beginning on December 3, 2010 and continuing through the filing date, the attached notice was posted in the Customer Service Office at 2102 N. Illinois Street

- beginning on December 3, 2010 and continuing through the filing date, the same notice was posted on IPL's website under the Pending section of the Rates, Rules and Regulations area

- a legal notice placed in the Indianapolis Star on December 4, 2010 as evidenced by the attached Publishers Affidavit; and

- beginning on the filing date, a copy of the Experimental Electric Vehicle Charging 30 day filing will be included on IPL's website under the Pending section of the Rates, Rules and Regulations area

I affirm under penalties for perjury that the foregoing representations are true to the best of my knowledge, information, and belief.

Dated this 10th day of December, 2010.

Ken Flora

Ken Flora
Director, Regulatory Affairs

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LEGAL NOTICE

Notice is hereby given that on or about December 10, 2010, Indianapolis Power & Light Company expects to file a request for approval of an Experimental Tariff, entitled Rate EVX – Experimental Time of Use Service For Electric Vehicle Charging on Customer Premises, with the IURC. The new Rate EVX will affect only those eligible customers who volunteer to participate in the Experimental electric vehicle charging program. IPL anticipates approval of the filing on or before January 26, 2011. The experimental rates will be in place for approximately two years, or until they are terminated or superseded by new rates approved by the IURC.

This notice is provided to the public pursuant to 170 IAC 1-6-6. The contact information, to which an objection should be made, is as follows:

Secretary
Indiana Utility Regulatory Commission
101 W. Washington Street, Suite 1500 East
Indianapolis, Indiana 46204
Telephone:(317) 232-2700
Fax: (317) 232-6758
Email: info@urc.in.gov

Office of Utility Consumer Counselor
115 W. Washington Street, Suite 1500 South
Indianapolis, Indiana 46204
Telephone:(317) 232-2484
Toll Free: 1-888-441-2494
Fax: (317) 232-5923
Email: uccinfo@oucc.in.gov

Dated December 4, 2010.

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Secretary
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Telephone: (317) 232-2484
Toll Free: 1-888-441-2494
Fax: (317) 232-5923
Email: uccinfo@oucc.in.gov

Dated December 4, 2010.
(S - 12/4/10 - 5746930)

PUBLISHER'S AFFIDAVIT

State of Indiana SS:
MARION County

Personally appeared before me, a notary public in and for said county and state, the undersigned **Kerry Dodson** who, being duly sworn, says that SHE is clerk of the INDIANAPOLIS NEWSPAPERS a DAILY STAR newspaper of general circulation printed and published in the English language in the city of INDIANAPOLIS in state and county aforesaid, and that the printed matter attached hereto is a true copy, which was duly published in said paper for **1** time(s), between the dates of:

12/04/2010 and **12/04/2010**

Kerry Dodson
Clerk
Title

Subscribed and sworn to before me on **12/04/2010**

Louise M Powell
Notary Public

My commission expires:

LOUISE M. POWELL
NOTARY PUBLIC
SEAL
STATE OF INDIANA
MY COMMISSION EXPIRES February 2?, 2016

Form 65-REV 1-88