

Conservation as an alternative to building Site C

As a concerned ratepayer, I have noticed that there is not enough effort to educate the public about energy conservation. There is also no incentive to conserve. Much is said about "keeping rates low" and indeed the previous Energy and Mines Minister Bill Bennett said "It's clear that to keep rates low, we must choose the option of building Site C." The goal of low rates does not encourage conservation. We must instead keep **total energy bills low** by using (i.e. wasting) less energy.

Under the Terms of Reference section 3 (b) (iv), I request that the BCUC consider the potential savings of a demand-side management initiative, used in many jurisdictions around the world, called Time-Of-Use Pricing. Time-Of-Use rates allow customers the option of changing their electricity use habits so they can save money on their electrical bills. We thus buy time by lowering peak demand. Then the other commercially feasible generating projects that are on the table could be developed, along with renewable solar power in residential applications, to power homes and charge electric vehicles for a long time into the future.

By 2012, BC Hydro had installed smart meters at a cost of at least \$1 Billion, and the only justification that I can find is that it was to reduce theft of energy by marijuana grow-ops. BC Hydro has no declared intention of introducing Time-Of-Use Pricing. Please read the page <https://www.bchydro.com/news/conservation/2016/providing-electricity-for-when-you-need-it.html>

Entitled "**Planning B.C.'s electrical system is about designing it for peak energy demands**". Here are some excerpts:

"But the electrical system in B.C. can't be designed around early Sunday mornings, just as L.A. can't design its road infrastructure for when there are no cars on the road...They both need to be developed with enough capacity to accommodate us when things are busy...But while conservation efforts can help ease the total amount of electricity used in the province, the system needs to be able to accommodate those situations when everyone needs power at the same time."

Searching for "Time of Use" on the BC Hydro site produced this result:

Does BC Hydro have time-of-use rates?

BC Hydro doesn't use time-of-use rates — most residential customers are charged under the Residential Conservation Rate...If voluntary or mandatory time-of-use rates were considered in the future, they'd only be implemented after public consultation and an independent regulatory review...Learn more about our rates

I find it interesting that BC Hydro won't implement time-of-use rates but it implemented Site C without public consultation and without independent regulatory review, such as by the BCUC. My research (attached) shows that energy and cost savings are being realized in many places in the world. Other

jurisdictions would like to do it but are faced with the up-front cost of installing smart meters. We already have them here in BC. Why not consider using Time-Of-Use Pricing?

In spite of constantly promising low rates, BC Hydro is increasing rates. Please read the page <https://www.bchydro.com/news/conservation/2017/increasing-rates-growing-demand.html>

Entitled "**Why we're increasing rates: a look at how we're meeting growing electricity demand**" Here are some excerpts:

"We've been working hard to keep rates as low as possible as we upgrade the electricity system. But we need to make major investments [**i.e. Site C**], and that's going to have an impact on the rates that we need to charge...We're keeping rates low and ensuring that any rate increases are predictable, while making the investments into our **dams** and power lines that are needed to provide reliable power."

Please read the page <https://www.bchydro.com/accounts-billing/rates-energy-use/electricity-rates/residential-rates.html>

Entitled "**Residential Rates**". Here are some excerpts:

"Most residential customers are charged under the Residential Conservation Rate. Residential customers under the Residential Conservation Rate receive service under rate schedule 1101 of the Electric Tariff...Customers are charged one rate for electricity up to a certain threshold in each billing period, and a higher rate for all electricity use beyond that threshold. This "stepped" rate is designed to encourage conservation...Why we're increasing rates: How we're meeting growing electricity demand"

BC Hydro says that the stepped rate is designed to encourage conservation but it doesn't. I have talked to many people and my own house is the only one I can find that only pays the Step 1 Rate. Everyone else I have asked uses enough power to step into Step 2.

It is good that the new government has now permitted the BCUC to review the project. If British Columbians wasted less energy by reducing the demand side, there would be no need to build such a massive supply-side project as Site C at such a massive cost. The money that has already been spent on Site C has been a massive, ill-conceived mistake. It has not passed the "point of no return". We should not throw good money after bad.

Catherine Culley



Internet References:

https://en.wikipedia.org/wiki/Peak_demand

Peak load: For an [electric utility](#) company, the actual point of peak demand is a single half-hour or hourly period which represents the highest point of customer consumption of electricity. At this time there is a combination of office, domestic demand and at some times of the year, the fall of darkness. Some utilities will charge customers based on their individual peak demand. The highest demand during each month or even a single 15 to 30 minute period of highest use in the previous year may be used to calculate charges.

Off Peak: Peak demand is considered to be the opposite to off-peak hours when power demand is usually low. There are off-peak [time-of-use rates](#).

https://en.wikipedia.org/wiki/Dynamic_pricing

Time-based pricing of services such as provision of [electric power](#) includes, but is not limited to:

- **Time-of-use pricing (TOU pricing)**, whereby electricity prices are set for a specific time period on an advance or forward basis, typically not changing more often than twice a year. Prices paid for energy consumed during these periods are preestablished and known to consumers in advance, allowing them to vary their usage in response to such prices and manage their energy costs by shifting usage to a lower cost period or reducing their consumption overall ([demand response](#))
- **Critical peak pricing** whereby time-of-use prices are in effect except for certain peak days, when prices may reflect the costs of generating and/or purchasing electricity at the wholesale level
- **Real-time pricing** whereby electricity prices may change as often as hourly (exceptionally more often). Price signal is provided to the user on an advanced or forward basis, reflecting the [utility's](#) cost of generating and/or purchasing electricity at the wholesale level; and
- **Peak load reduction credits** for consumers with large loads who enter into pre-established peak load reduction agreements that reduce a utility's planned capacity obligations.

A utility with regulated prices may develop a time-based pricing schedule on analysis of its cost on a long-run basis, including both operation and investment costs. A utility operating in a market environment, where electricity (or other service) is auctioned on a [competitive market](#), time-based pricing will typically reflect the price variations on the market. Such variations include both regular oscillations due to the demand pattern of users, supply issues (such as availability of intermittent natural resources: water flow, wind), and occasional exceptional price peaks.

Price peaks reflect strained conditions on the market (possibly augmented by market manipulation, as during the [California electricity crisis](#)) and convey possible lack of investment.

Ottawa, Ontario

<https://hydroottawa.com/accounts-and-billing/residential/time-of-use>

The rate periods are different in the summer and winter months.

Summer Weekdays (May 1 to October 31)

The highest energy prices occur over the afternoon, when air-conditioning use is greatest.

- Off-Peak (7 pm to 7 am and all day weekends and [holidays](#))
- Mid-Peak (7 am to 11 am and 5 pm to 7 pm)
- On-Peak (11 am to 5 pm)

Winter Weekdays (November 1 to April 30)

There are two peak periods during the winter months: in the early morning and in the evening. During these times, increased space heating, lighting and appliance use is common.

- Off-Peak (7 pm to 7 am and all day weekends and [holidays](#))
- Mid-Peak (11 am and 5 pm)
- On-Peak (7 am to 11 am and 5 pm to 7 pm)

Weekends and Holidays

These periods are all off-peak, both summer and winter. View the current [Holiday Schedule](#).

<https://peakpowersavers.com/time>

By finding ways to lower your energy use during these key times, you can help reduce the need for more energy generation plants. This helps us keep costs low and limits our environmental impact, and we'd like to pass the savings on to you.

Australia

<http://www.yourenergysavings.gov.au/information/peak-smart-meters-time-use-pricing>

Time-of-use pricing means you're charged at several different rates, depending on the time of day you use energy. Prices are usually divided between peak (2pm–8pm weekdays), shoulder (7am–2pm and 8pm–10pm on weekends) and off-peak (all other times) with off-peak being the least expensive. Using off-peak hot water and smart (or interval) metering are two ways to make use of time-of-use pricing.

Nevada

<https://www.nvenergy.com/home/paymentbilling/toucalc.cfm>

The NV Energy Time of Use (TOU) rate provides you with a choice. Customers who are willing to reduce consumption during periods when the total demand for electricity is highest, (the peak) will save money. This peak is between 1 p.m. and 7 p.m. daily, June through September, when the weather is hottest and electricity use is greatest.

Benefits of the Time-Of-Use Program:

- There's no risk in trying the TOU program for the first year due to the Guaranteed Lowest Rate* (GLR) feature.
- Shifting your on-peak usage to mid-peak or off-peak will keep your rates down.
- Preserves the environment.

Notice: In order to participate in this TOU Rate program, you must allow NV Energy access to your electric meter. Participation, however, is not guaranteed - you must be pre-qualified.

Saving Energy with Time Of Use

- If your home is generally unoccupied during peak hours, you may experience the greatest benefit from this program.
- Use laundry machines, dishwashers, chargers, and others appliances during off-peak hours.
- During warm months, set your thermostat to 78-80 during peak hours.
- Keep unneeded lights off during peak hours.
- Consider joining the NV Energy [Smart Thermostat](#) Program.
- If you have or are considering to add solar generation to your home, you may experience added benefit from this program.
- [You can find more energy saving tips here.](#)

Texas

<http://www.networx.com/article/peak-energy-times>

You can save money and help the environment by running appliances when other people aren't running their appliances. Peak electric usage times vary by location and season. However, it's generally better to use appliances late at night, when demand on the electric grid is lower, rather than during business hours and early evenings.

In much of the country, electric use peaks on weekday summer afternoons, so that is the worst time to run appliances. The electric peaks are primarily driven by [residential air conditioning](#). Peaks occur on summer afternoons, generally between 3 and 7 p.m. Envision a person coming home from work discovering that the home is warm and

turning on the AC. Multiply that by thousands and thousands of customers doing the same thing. "Across all seasons if appliance use is avoided between 4 p.m. and 8 p.m., this generally misses the peak in the city's load profile," said Norm Weaver of the municipal utilities department in Fort Collins, Colorado. Soon, both the city and electric customers will have more constantly updated information about peak electric demand. Fort Collins is **replacing its electric meters with new models that show the times of peak usage**, and make the information more easily available for customers. It is among many municipalities considering tiered rate structures based on peak demand usage. You can program your own appliances or simply manually operate them during off-peak hours. It will save money and help protect the environment.

<http://d-bits.com/tou-rates-favor-pv/>

Facilitated by smart meter adoption, Time of Use rates are being offered in many jurisdictions. In some cases like that in San Diego, there are even special Time of Use rates specifically for PV installations.

Where smart meters are deployed, Time of Use (TOU) rate structures soon follow. Time of Use pricing can have a positive impact on the economic returns for a PV System. Peak demand, and peak pricing, is highly coincident with solar PV system output.

A key utility benefit of TOU rates is matching the costs of electricity generation and transmission with its usage. TOU rates also provide the ratepayer (aka the utility 'customer') with an economic incentive to moderate electricity consumption during the peak demand periods.

Satisfying peak demand is expensive

Satisfying peak demand – especially during hot summer months – has long been a vexing challenge for utilities. Electrical systems must be designed for the peak requirements all the way from generation sources through to the extensive transmission and distribution infrastructure. When it comes to predicting load demands, weather plays a critical role. Hot summer afternoons drive demand for air conditioning which, in turn, drives the peak.

Hot weather, however, also reduces generation efficiency, lowers hydro reservoirs and reduces grid transmission capacity. Just when we need more electricity, it is harder and more expensive to generate and transmit. TOU rates allow utilities to charge for higher cost energy when that energy is being used, and to charge less when it is easier and less expensive to supply.

The peak problem is increasing

In California, peak requirements are increasing faster than overall electricity demand. Load factors (average demand compared to peak demand) are declining as a result. More and more infrastructure is required to satisfy less and less baseload demand. Today's generation and transmission mix will not satisfy tomorrow's demand needs.

Proportionally more peaking infrastructure is required.

<https://www.mge.com/customer-service/home/elec-rates-res/tou-res/>

Time-of-use (TOU) rates give customers the opportunity to reduce their electric bills by changing when they use electricity. If you shift significant electricity use from times of high electric demand to when demand is low, you will save. Complete the [Benefit Worksheet](#) to see if TOU rates may be right for you.

TOU periods

Customer consumption is divided into four time periods.

On-peak 1 = 10 a.m. to 1 p.m., Monday through Friday

On-peak 2 = 1 p.m. to 6 p.m., Monday through Friday

On-peak 3 = 6 p.m. to 9 p.m., Monday through Friday

Off-peak = 9 p.m. to 10 a.m., Monday through Friday, all day weekends

and holidays

Pricing varies with time of day

- During off-peak hours, electric energy charges are lower than standard electric service rates.
 - During on-peak they're higher.
- All electric consumption is charged a lower base energy, all kWh charge.
 - During off-peak times, it is the only energy charge.
- On-peak electric consumption is charged the base energy, all kWh charge *plus* a peak charge that reflects the extra cost to generate electricity for the highest summer energy demand period.

<https://www.tep.com/time-of-use/>

Our Time-of-Use plan includes higher “on-peak” rates during periods when customers typically use the most power and lower “off-peak” rates the rest of the day. In this way, the plan rewards customers who shift their usage away from on-peak hours. Time-of-Use is designed to reward customers who do their part to reduce demand on the electric grid, particularly during peak usage periods. Reducing the peak energy demand promotes more efficient use of our energy resources and can help limit future rate increases.

How can I shift my electric usage to off-peak time periods?

- Operate washing machines, clothes dryers, dishwashers and other large appliances during off-peak hours.
- Adjust your thermostat to reduce heating and cooling during on-peak hours or when you are not at home.

- Install timers on electric water heaters and recirculation pumps so they operate mainly during off-peak hours.
- Set timers on pool and spa pumps to run during off-peak hours.
- Turn off all but essential lights during on-peak hours.
- Enjoy electricity-consuming hobbies during the off-peak hours.
- If you have an electric vehicle, charge it during off-peak hours.

TIME-OF-USE HOURS

SUMMER: May-September

MONDAY-FRIDAY	midnight - 3 p.m. OFF-PEAK	3 - 7 p.m. ON-PEAK
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WEEKENDS & MAJOR HOLIDAYS OFF-PEAK

Major holidays include Memorial Day, Independence Day (July 4), and Labor Day. If Independence Day falls on Saturday, the weekend schedule applies on the preceding Friday, July 3. If Independence Day falls on Sunday, the weekend schedule applies on the following Monday, July 5. All weekends are off-peak.

WINTER: October-April

MONDAY-FRIDAY	midnight - 6 a.m. OFF-PEAK	6 - 9 a.m. ON-PEAK
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WEEKENDS & MAJOR HOLIDAYS OFF-PEAK

Major holidays include Thanksgiving Day, Christmas Day and New Year's Day. If Christmas Day and New Year's Day fall on Saturdays, the weekend schedule applies on the preceding Fridays, Dec. 24 and Dec. 31. If Christmas Day and New Year's Day fall on Sundays, the weekend schedule applies on the following Mondays, Dec. 26 and Jan. 2. All weekends are off-peak.