

# ENERGY & THE ENVIRONMENT

## AT THE ALBERTA SCHOOL OF BUSINESS

### Climate Policy and Electricity Markets

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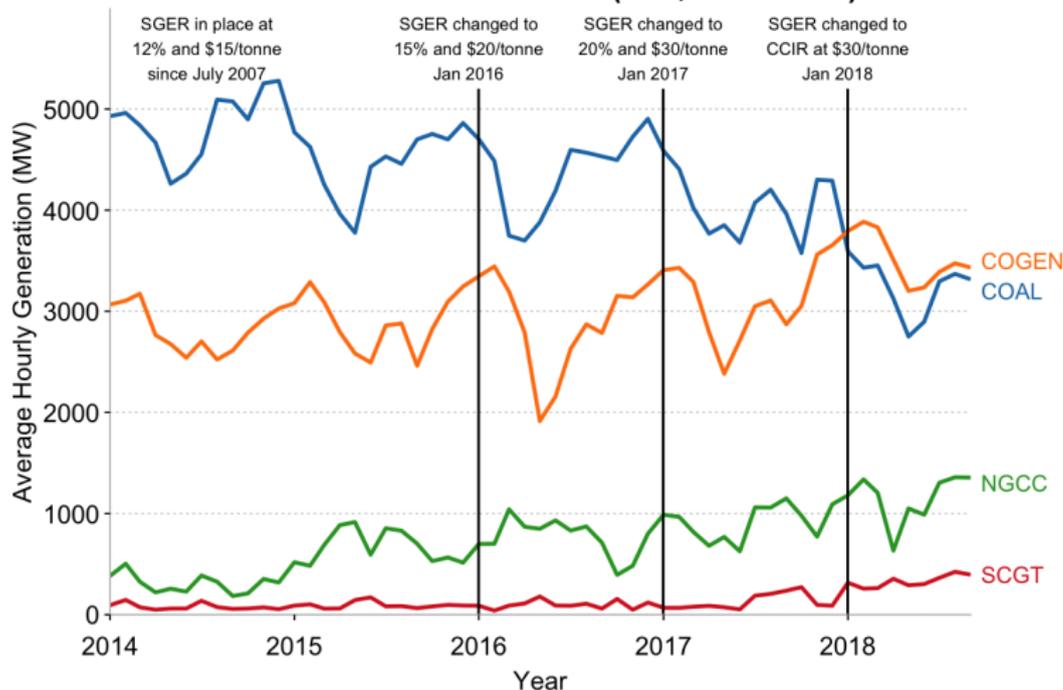
October 17, 2018

## 4 Key Points for Policy Design

- Producers or grid operators will respond to carbon prices and policy design elements
- Make sure the incentives are correct
- Make sure the policy objectives and designs fit the region well
- Circumstances will be different in different markets - no one-size fits all

# Dispatch Decisions Reflect GHG Prices and OBA Design

## Coal and Gas Generation (MW, 2014-2018)



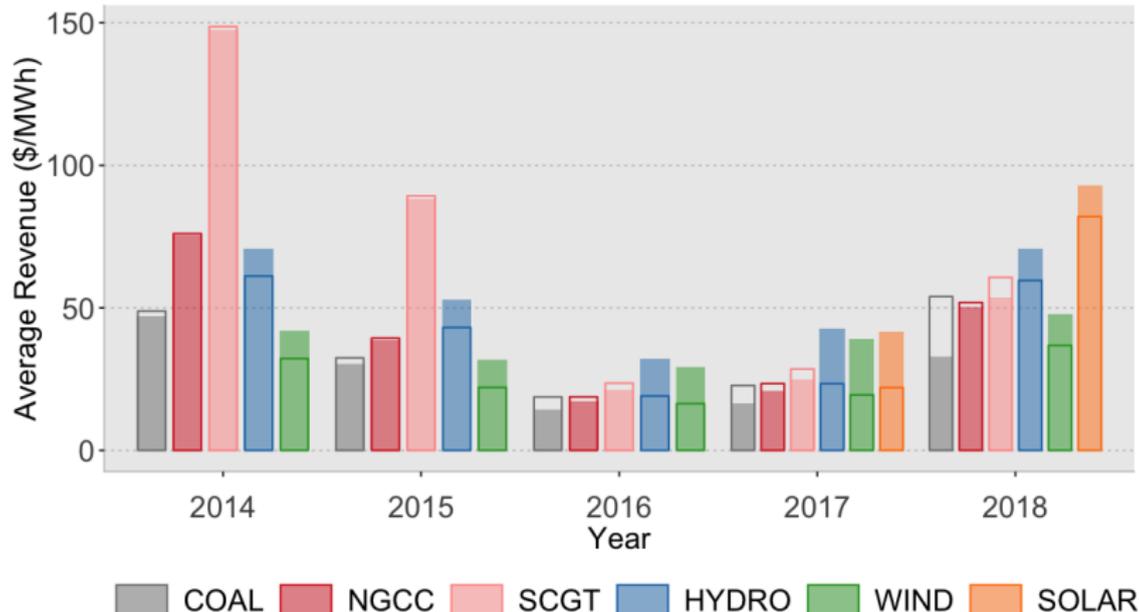
Source: AESO Data, accessed via NRGStream

Graph by @andrew\_leach

# Net Energy Revenues Reflect GHG Prices and OBA Design

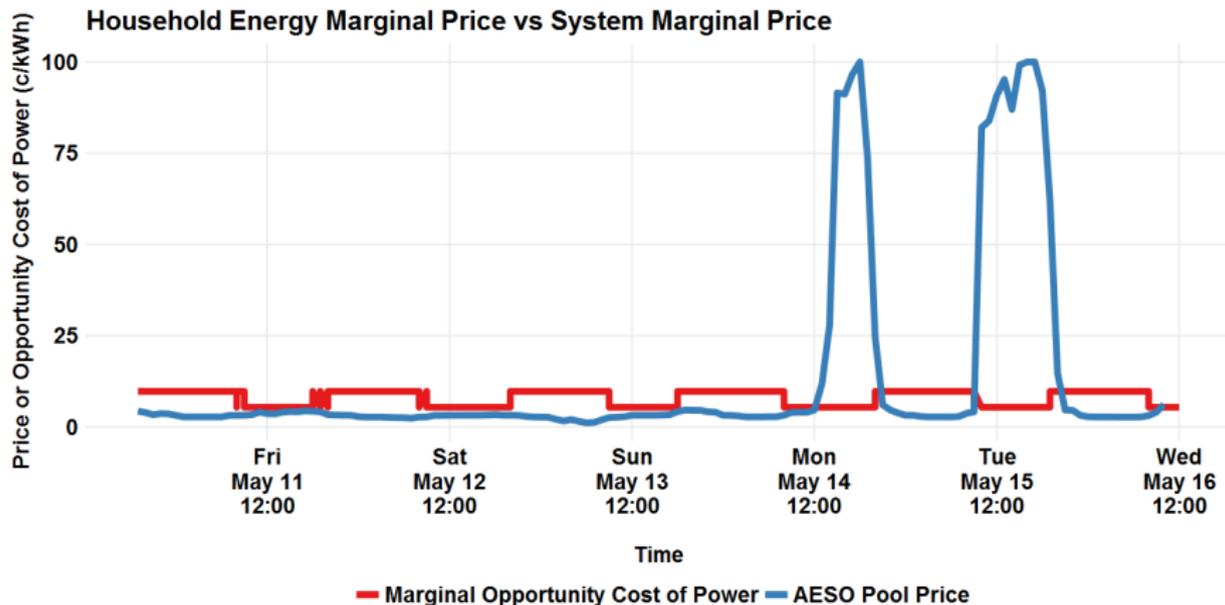
## Change in Energy Price Capture Due to GHG Policies (2014-2018)

Outline shows market revenues, fill shows market revenue net emissions policies revenues and costs



Source: AESO and SGER Data, with assumption that renewables capture full offset value pre-2018.  
AESO data accessed via NRGStream, graph by @andrew\_leach

# Are we sending the right price signal to all consumers and producers?

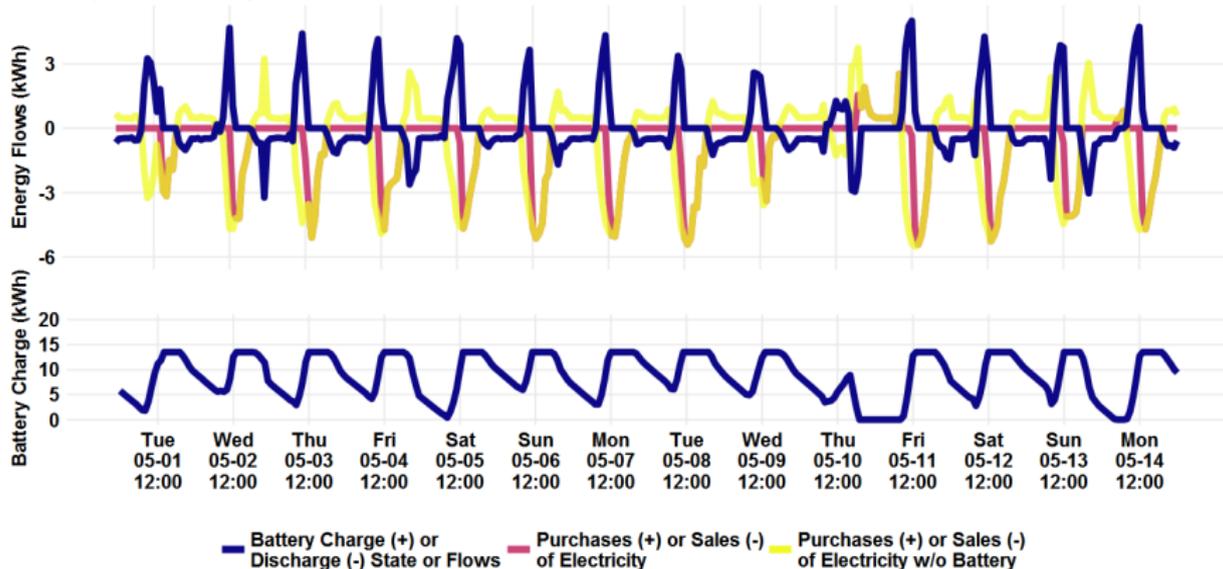


Source: Household power data via Neurio API, pool price data via AESO  
Graph by Andrew Leach

# What works in one jurisdiction may not work in another

## Household Energy Shapes with 13.5KWh of Tesla Powerwall Storage Capacity

May 1, 2018 to May 15, 2018

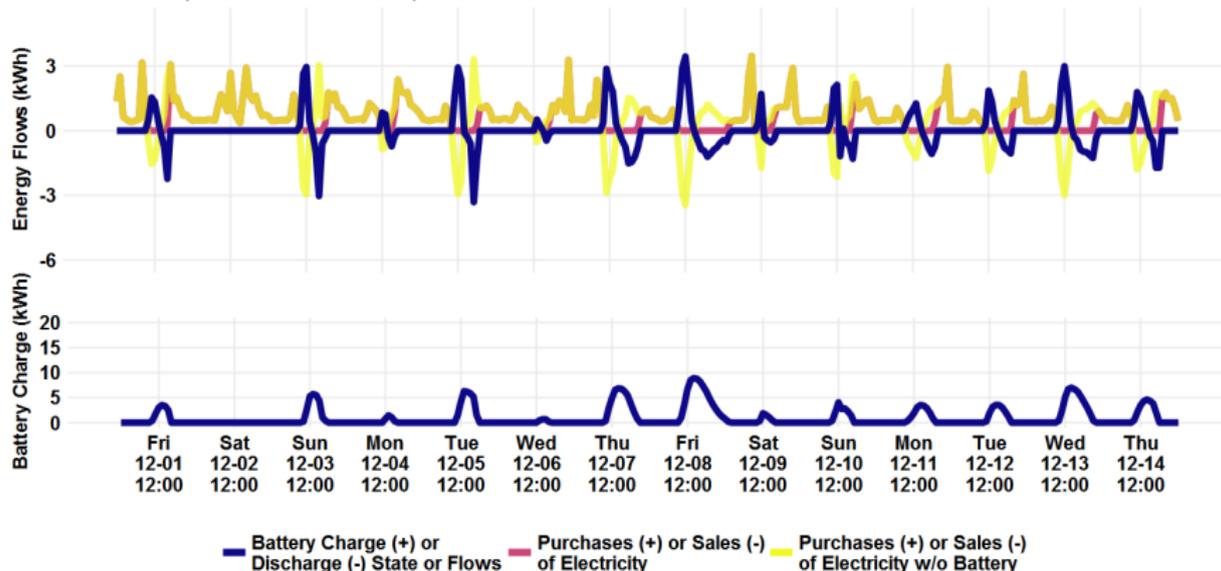


Source: SolarPeople system data via Neuroio API, graph and battery simulation by Andrew Leach

# What works in one jurisdiction may not work in another

## Household Energy Shapes with 13.5KWh of Tesla Powerwall Storage Capacity

December 1, 2017 to December 15, 2017

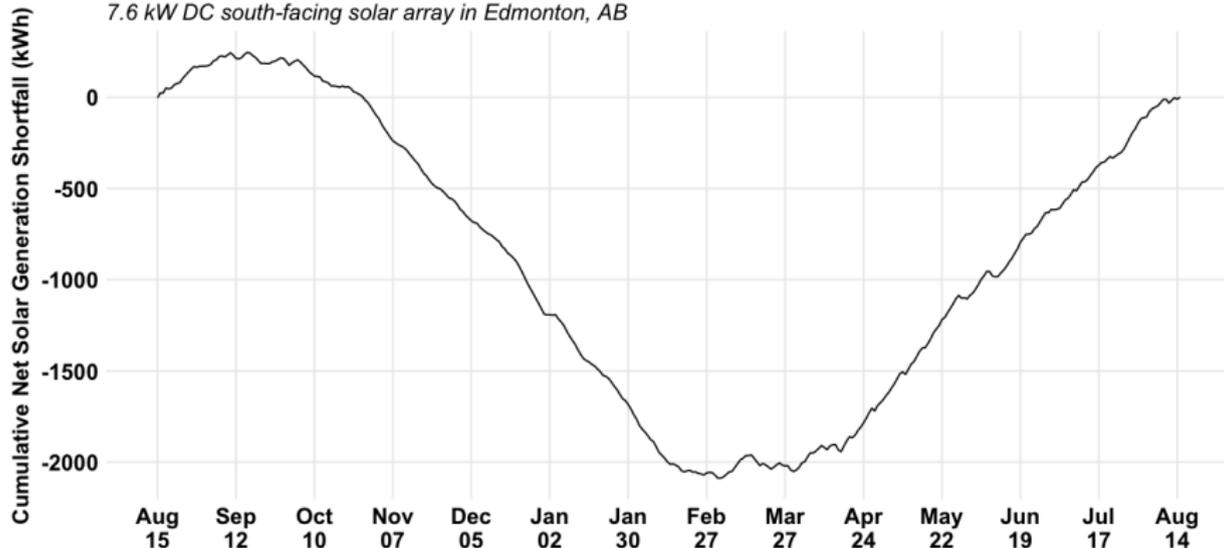


Source: SolarPeople system data via Neuroio API, graph and battery simulation by Andrew Leach

# What works in one jurisdiction may not work in another

## Cumulative Solar Generation Net of Consumption (August 2017-Current)

7.6 kW DC south-facing solar array in Edmonton, AB



Source: Generation data via Neurio API, graph by Andrew Leach. From 14:35 on Aug 16, 2017 to 14:35 on Aug 16, 2018, cumulative generation was 7954kWh and net deliveries to the grid were 2kWh.

## By Request

- Commit to outcomes your policies are likely to achieve
- Remember that the electricity market is always broken for someone
- Write policies that fit your region, not California or Germany (unless those are your regions)
- Make sure your policies force advocates to put their money where the mouth is