Dinosaurs, Death Spirals and Digitization:
The utility world as we know it is ending – Or is it?

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Who and What are the Dinosaurs?

- Utilities – of course!
- Net Metering Advocates (Maybe not self reflexively)
- Net Metering Policies (Written in the 90s!)
- Utility Rates??
- One way power flow distribution systems
- Telephone power traders?
- Central Station Fossil Power Plants?
- Industrial Scale Renewable Projects
What is the Death Spiral?

- Utility Customers flocking to solar using net metering rates, avoiding paying their share of fixed costs

- Fewer customers paying fixed costs causes the utilities and their regulators to raise rates on the remaining customers who then build solar, into the death spiral

- The utility dies because all the customers go solar plus storage . . .

- Grid is abandoned, falls into disrepair, storage doesn’t provide grid reliability or seasonal storage, customers got it wrong, utilities go bankrupt, Wall Street collapses, world as we know it ends . . .

- Or not . . .
Solar by Location – Honolulu
PV Capacity Needed for Net Zero Energy*

Monthly Electricity Use and Rooftop Solar Generation
Average Residential Customer - Honolulu, HI

Kilowatt-Hours per Month

1,800
1,500
1,200
900
600
300
0

January
February
March
April
May
June
July
August
September
October
November
December

Annual energy use per customer: 6,283 kWh
PV capacity needed for net zero energy: 3.954 kW DC

*Courtesy of Charlie Black
Solar by Location – Seattle
PV Capacity Needed for Net Zero Energy*

Monthly Electricity Use and Rooftop Solar Generation
Average Residential Customer - Seattle, WA

- Annual energy use per customer: 8,536 kWh
- PV capacity needed for net zero energy: 7.83 kW DC

*Courtesy of Charlie Black
What is Digitization

Digitization is Innovation !!!

- Distributed (Solar) Generation
- Smart Inverters
- Plug-In Electric Vehicles (two way power flow)
- Energy Storage (large batteries storing and discharging)
- Demand Response (i.e. Home energy management, irrigation systems, factory partial closures controlled by digital controls)
- “Smart” premises dispatching solar, storage, EV batteries
- Micro-Grids (self contained grids with back-up connection to utility grid, e.g universities, military bases, now subdivisions, even towns)
- On the customer side of the meter
- Utility and Customer Coordination – electronically, rates, consumption and generation

Is Digitization the Death Spiral for the Utility as we know it? Naahh . . . It’s Opportunity!
Ambitious Proposal:

What:
- Form a **Collaborative Workgroup** of Interested stakeholders to investigate, analyze, review, and develop model rates, tariffs, planning, interconnection and operational protocols for: distributed generation; demand response; storage; microgrids; home energy management and whatever else should be/could be included in the digital distribution system in the next 5/10/15 years??
- Report to the Legislature, Regulators, State Agencies, Consumer owned utility governing boards, electric customers, others:

Who:
- Utilities, Installers, Manufacturers, National Labs?, BPA?, UTC, Dept of Commerce, Power Council, EV Charging Station reps, EPRI, RAP, any other interested parties

When:
- Next 2 to 3 years, meet monthly, quarterly?

How ???? - Discussion