

# Advanced Grid Institute Industry Day

Energy Northwest

Jared Knode

Energy & Professional  
Services Manager

## **Energy Northwest – Who We Are**

- **Energy Northwest is a Joint Operating Agency in the state of Washington**
- **We are authorized to operate generating facilities and provide energy services in any state with our focus being the Northwest**
- **Our members are all public utility districts and municipalities in Washington, and our projects have participants in six states**
- **100% carbon free generation**

## **Energy Northwest Generation Projects:**

- **Columbia Generating Station (WA)**
- **Nine Canyon Wind Project (WA)**
- **Four Hydroelectric Projects (WA & OR) (EN and Customer Owned)**
- **White Bluffs Solar Station (WA)**
- **Horn Rapids Solar, Storage & Training Project (WA) (Public/Private Cooperation)**
- **Ruby Flats Solar Project (Public/Private Cooperation)**
- **Advanced Nuclear Project (Public/Private Cooperation)**

## **Electrification of Transportation:**

- **Electric Vehicle Infrastructure Transportation Alliance (EVITA)**
- **EVITA Phase 1 - Complete**
  - Nine Stations
  - WA Commerce Grant Funding
  - Public/Private Cooperation
- **EVITA Phase 2 – In Progress**
  - 10+ Stations
  - Public/Private Grant Funding
  - Public/Private Cooperation

## **Advanced Grid and Demand Side Management:**

- Demand Response Pilots (2015-2017)
- EN-DERMS Development
- Advanced Grid Interactive Load Efficiency (AGILE) – Smart Buildings

# The Shape of Future Power:



## Climate crisis: Greenhouse gases already emitted will warm Earth beyond limits in Paris agreement, research suggests



Clean power is now the law; Inslee signs bill for zero-carbon electricity by 2045

**May 7, 2019**

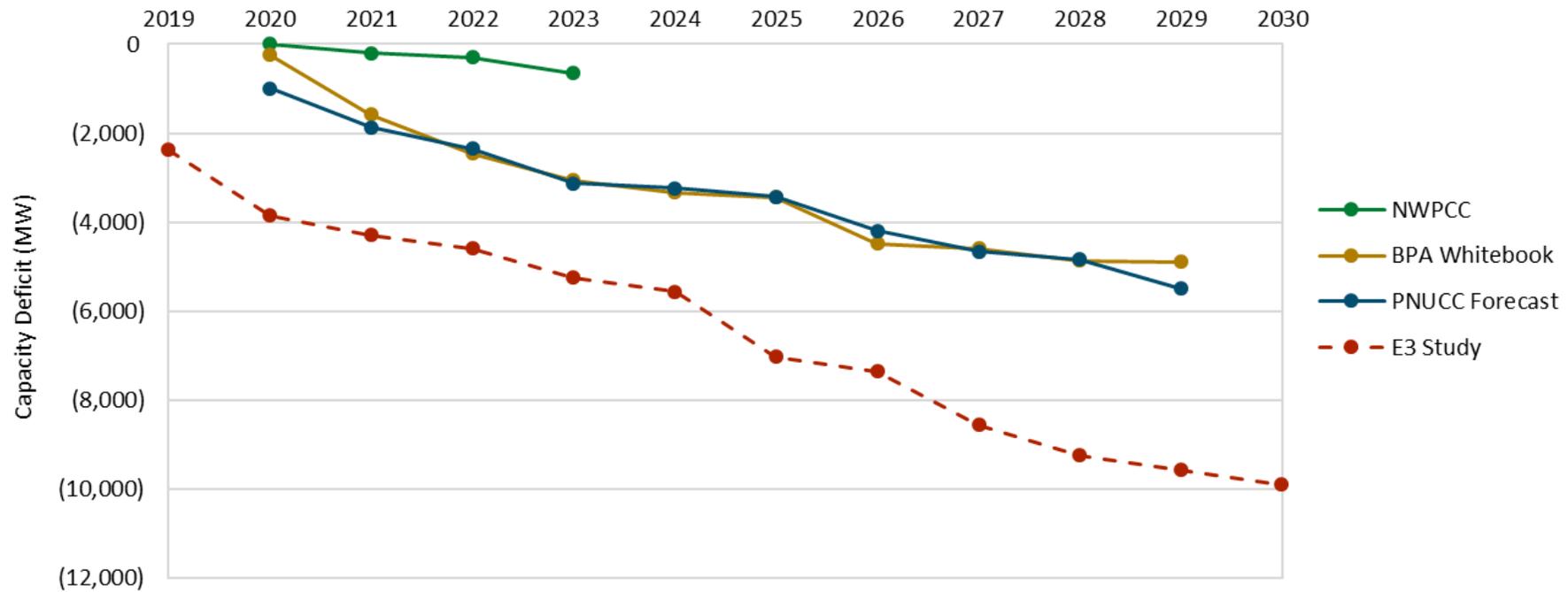
## Washington Clean Energy Transformation Act

- **By 2025**, utilities must **eliminate coal-fired electricity** from their state portfolios.
- **By 2030**, utilities need to be **greenhouse gas neutral**, which means utilities have flexibility to use limited amounts of electricity from natural gas if it is **offset by other actions**.
- **By 2045**, utilities must supply Washington customers with electricity that is **100% renewable or non-emitting, with no provision for offsets**.



Initial driver for Energy Northwest to explore alternative power sources

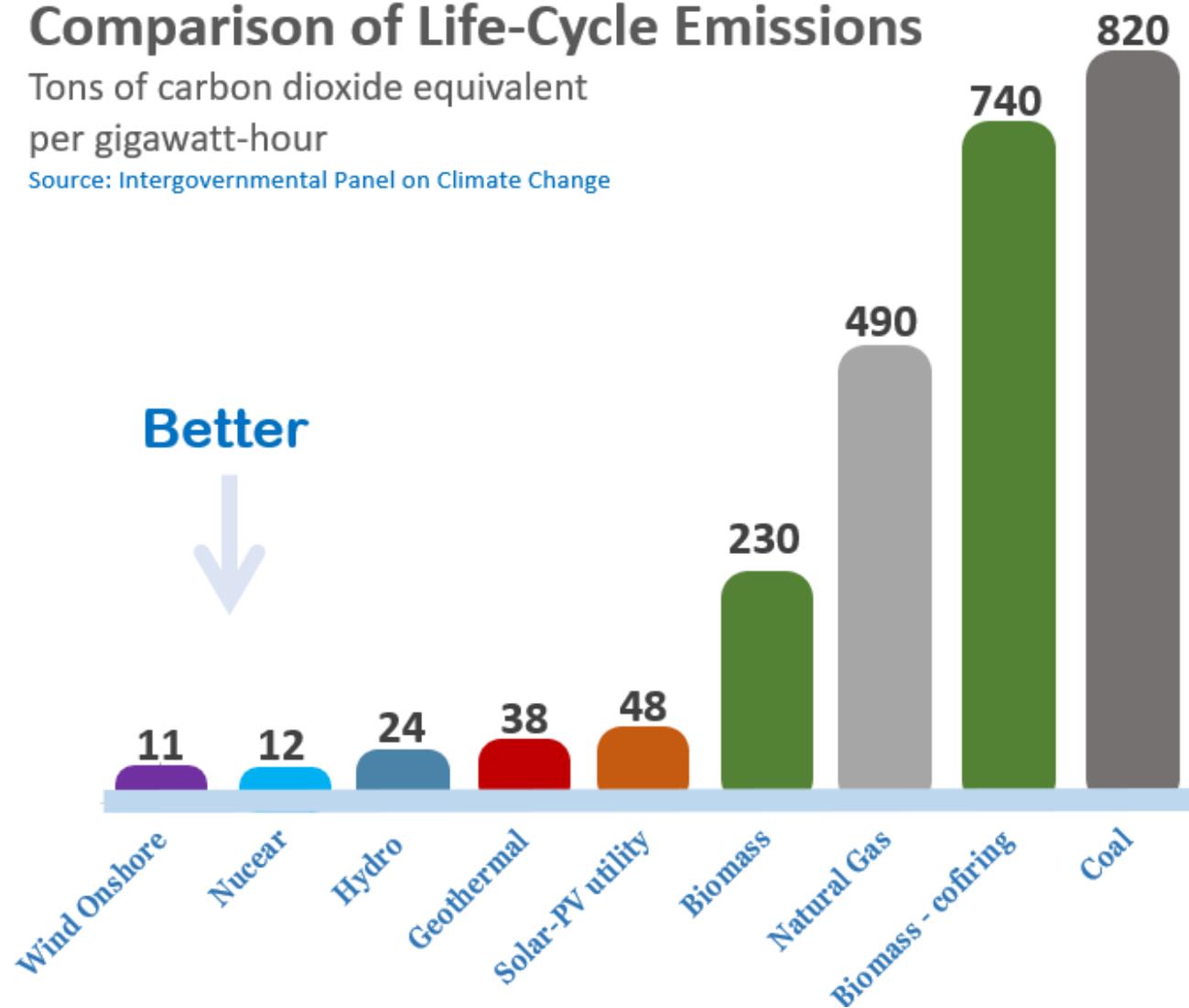
# Expected MW Deficit – Various Studies



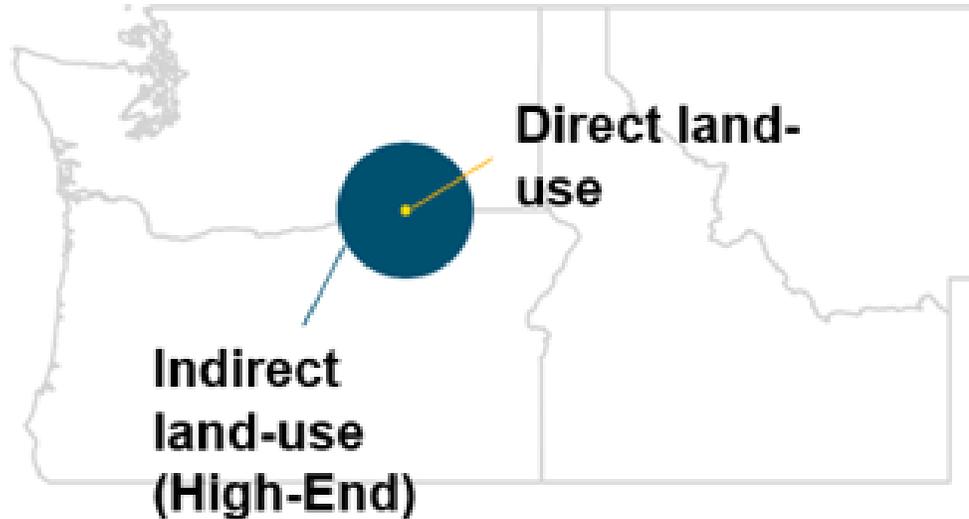
## Comparison of Life-Cycle Emissions

Tons of carbon dioxide equivalent  
per gigawatt-hour

Source: [Intergovernmental Panel on Climate Change](#)



## Estimate of Land Use



Direct land-use of wind and solar built to serve the Northwest are up to **2.5 times** the area of Portland and Seattle

Wind - 140,000 acres/GW

Solar - 8,000 acres/GW

Nuclear – 141 acres/GW

Indirect land-use of wind and solar are as high as **10 to 50 times** the area of Portland and Seattle

## **Advantages of Advanced Nuclear**

- **Enhanced safety – “walk-away safe”**
- **Smaller emergency planning zones**
- **Modular - fabrication at the factory and shipped on truck beds to plant locations (significantly reduced costs)**
- **Increased compatibility with renewables**
- **Smaller footprint**
- **Shorter time to construct**
- **Reduced overall costs**

## **Key Takeaways**

- **Change is Accelerating**
- **All of the Above Approach**
- **Speed and Consistency (Development and Assembly/Construction)**
- **Flexibility**
- **Integration**
- **Cost Control**
- **Work Force Development**

# Discussion