

# A Retrospective and Prospective Look at Energy in Southeast Alaska

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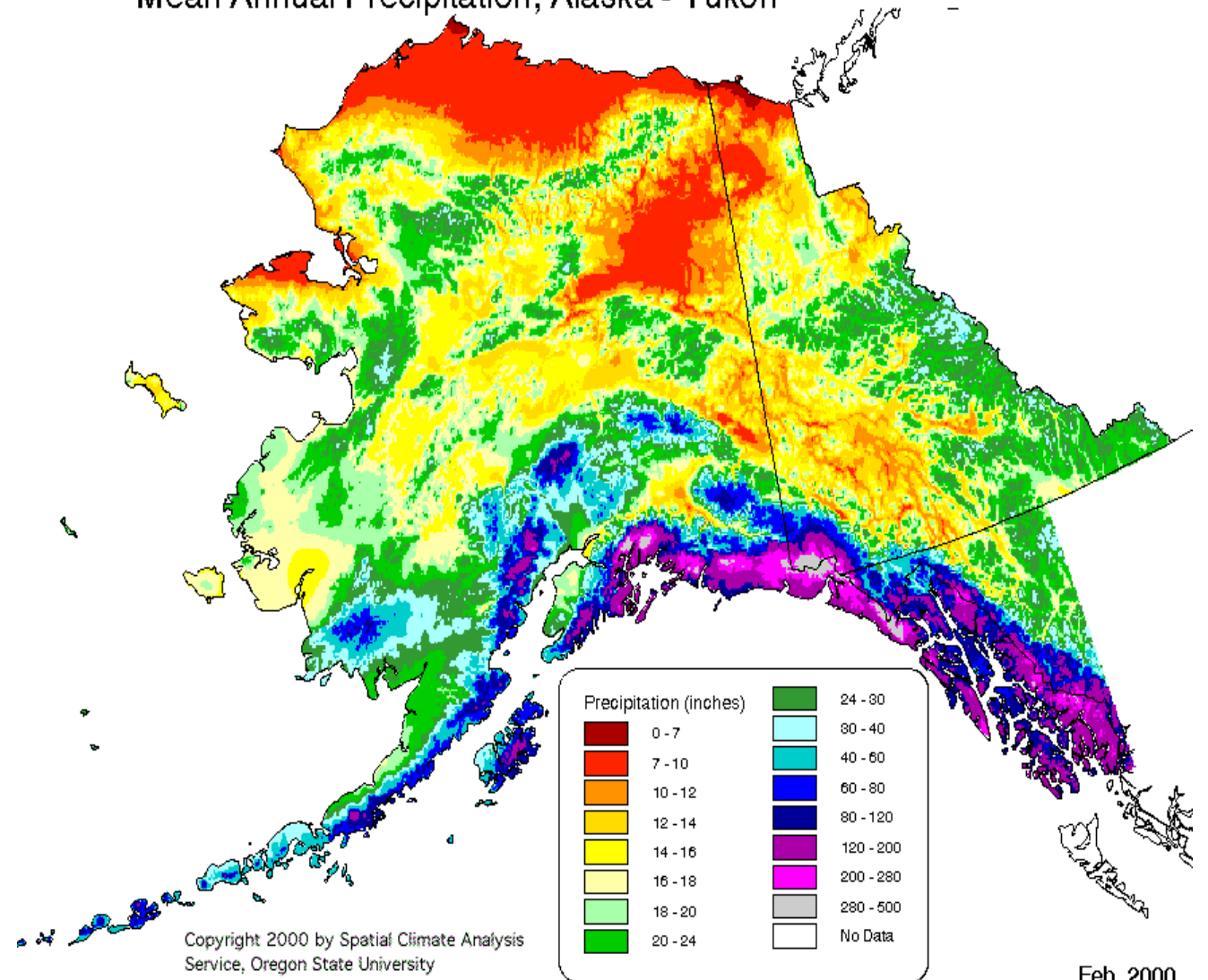
Southeast Conference Annual Meeting, Petersburg  
September 2016



# Southeast's superb natural resources

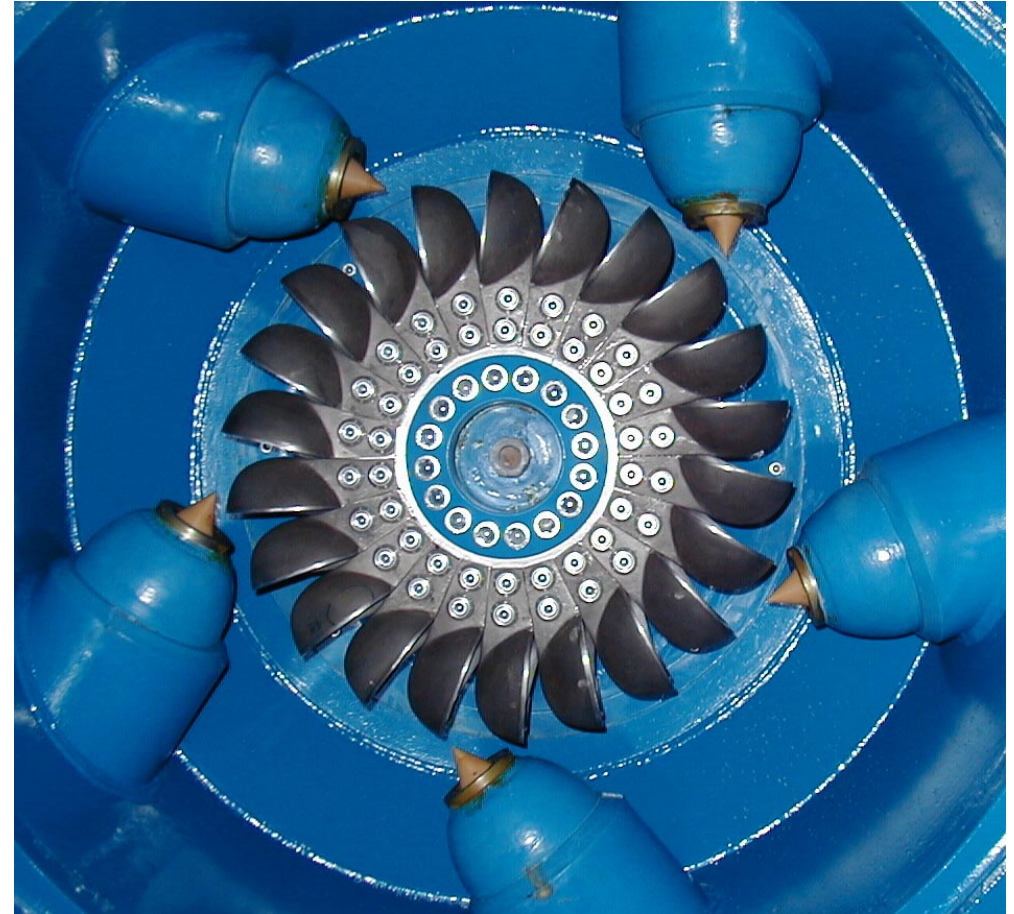
- Fish and seafood
- Human cultural heritage
- Human capacity
- Hydropower
- Wood for biomass heat
- Energy efficiency opportunities
- Heat pumps
- Transmission
- Transportation
- Natural beauty (tourism)

Mean Annual Precipitation, Alaska - Yukon



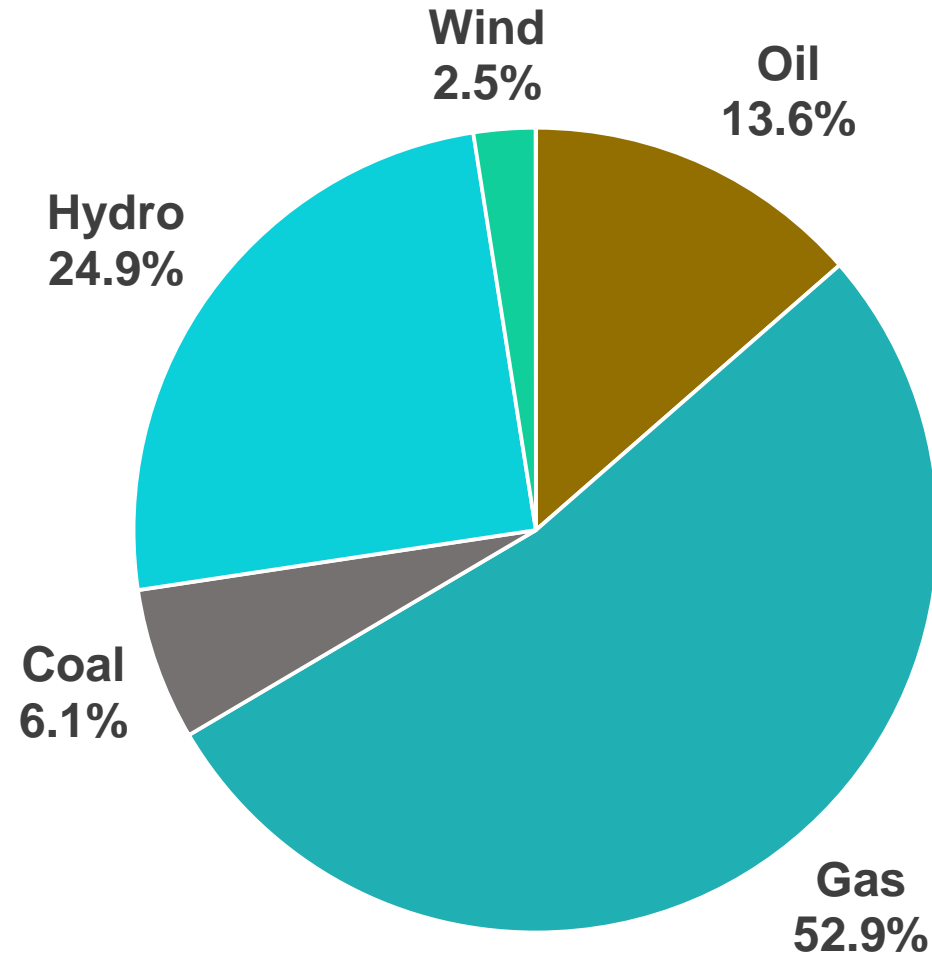
# Where the water hits the hydro turbine

- Rubber meets the road  
= Equals =
- Good projects successfully implemented
- Southeast has many examples



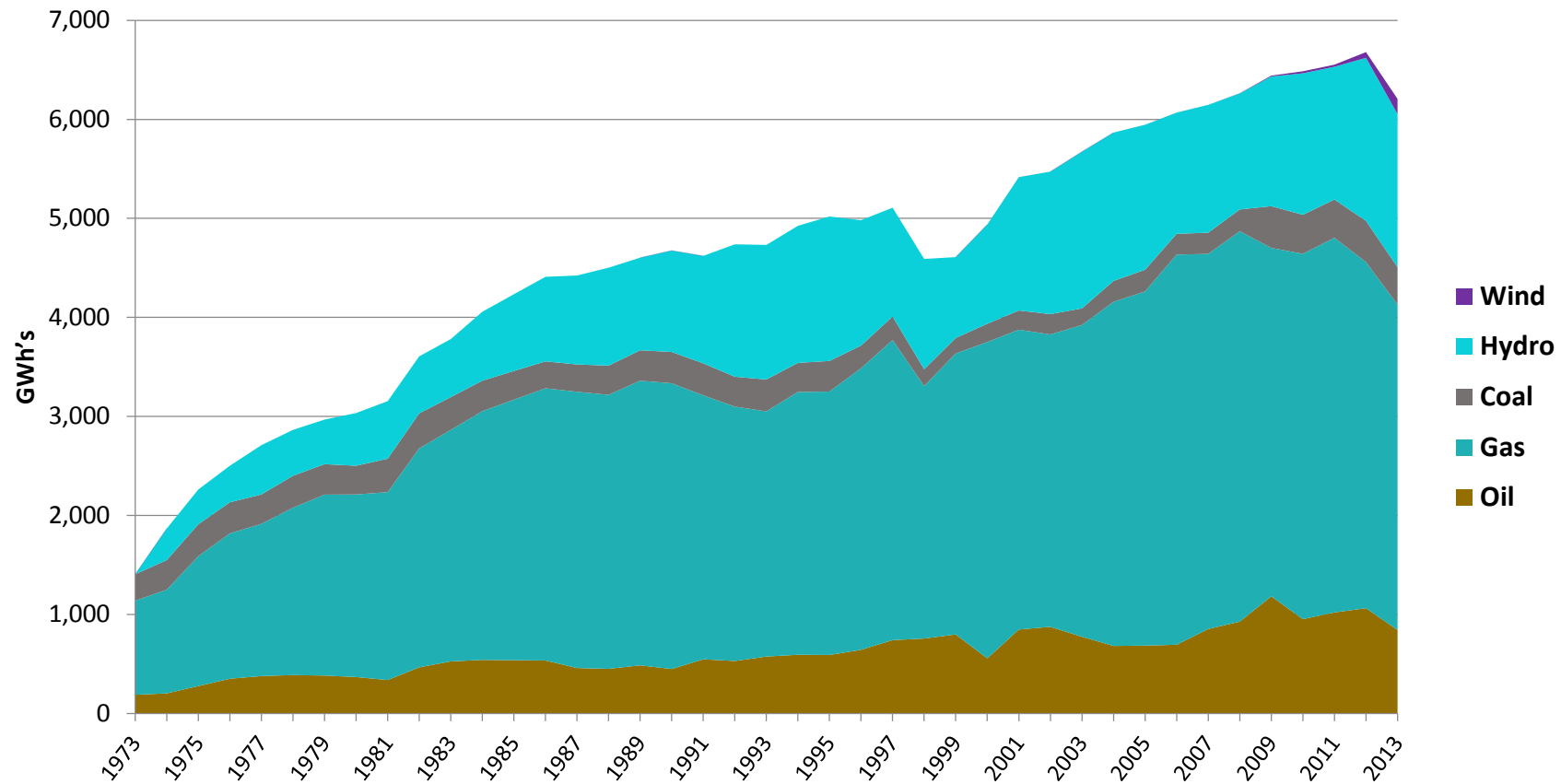


# Statewide Electricity Generation in Alaska












Source: 2013 Alaska Energy Statistics

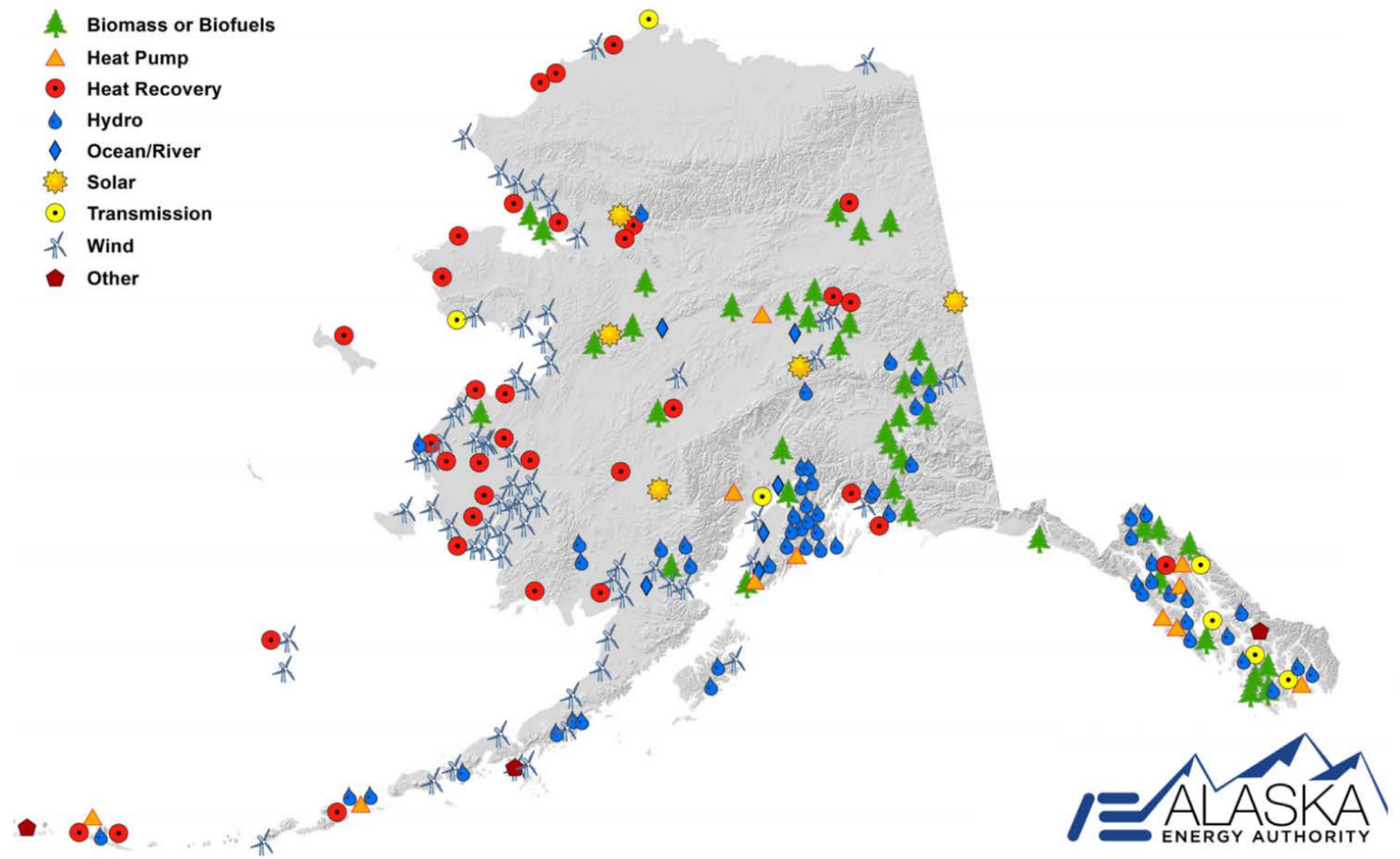
# Alaska Net Generation by Fuel Type 1973-2013



Source: 2013 Alaska Energy Statistics

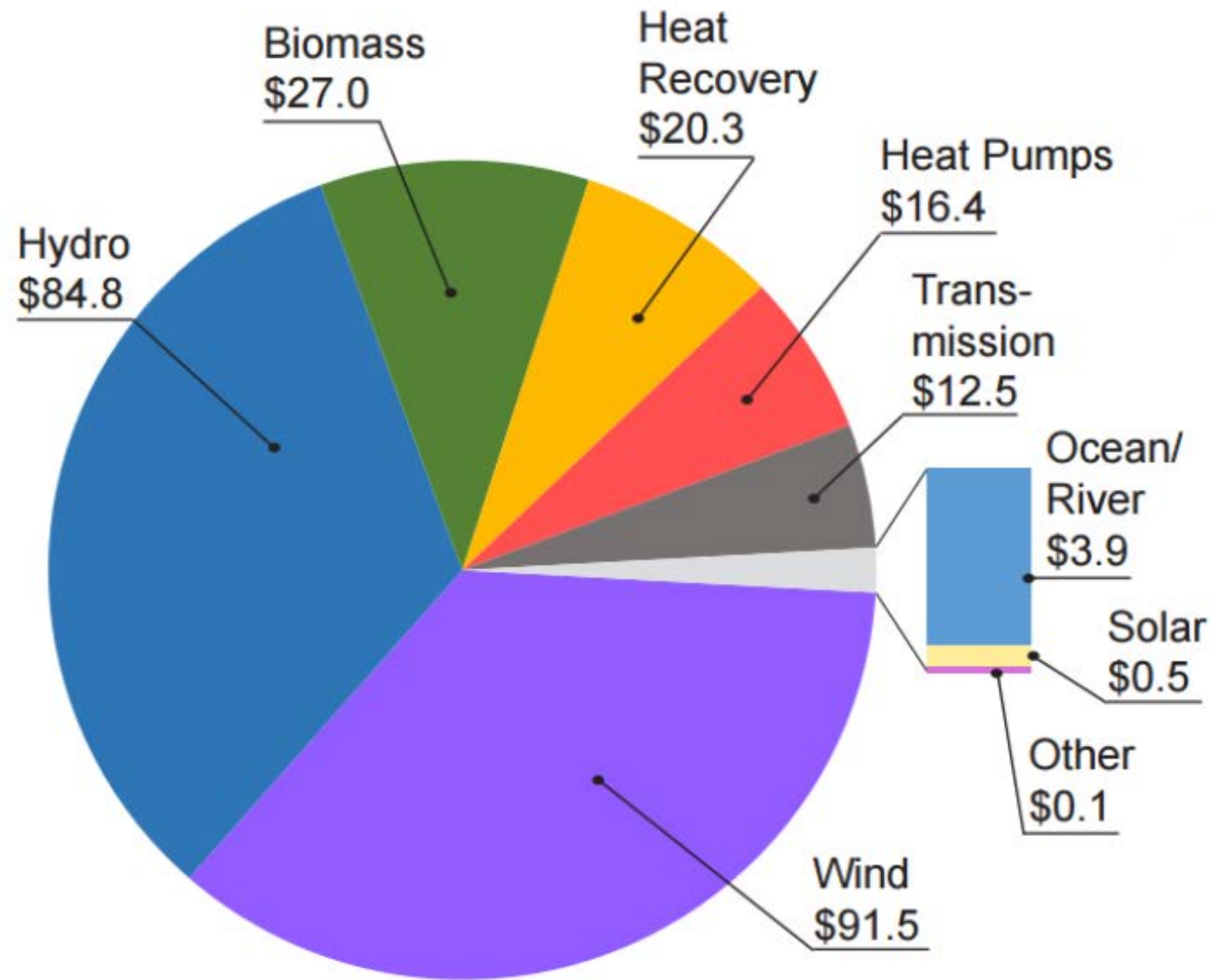
# RENEWABLE ENERGY FUND PROJECTS ROUNDS I-VIII

-  Biomass or Biofuels
-  Heat Pump
-  Heat Recovery
-  Hydro
-  Ocean/River
-  Solar
-  Transmission
-  Wind
-  Other



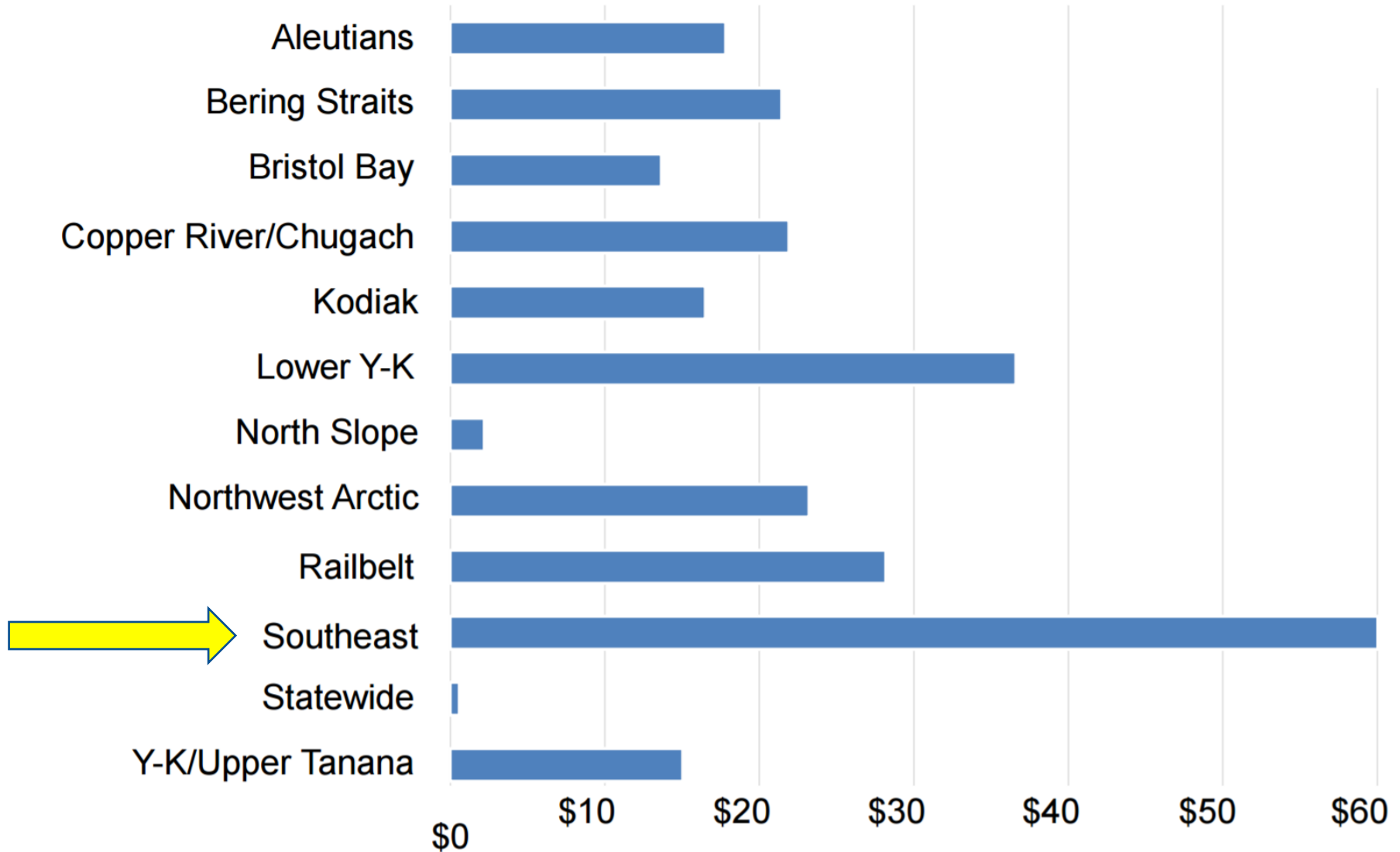
# FUNDED GRANTS BY ENERGY RESOURCE (\$ millions)

## ROUNDS I-VIII



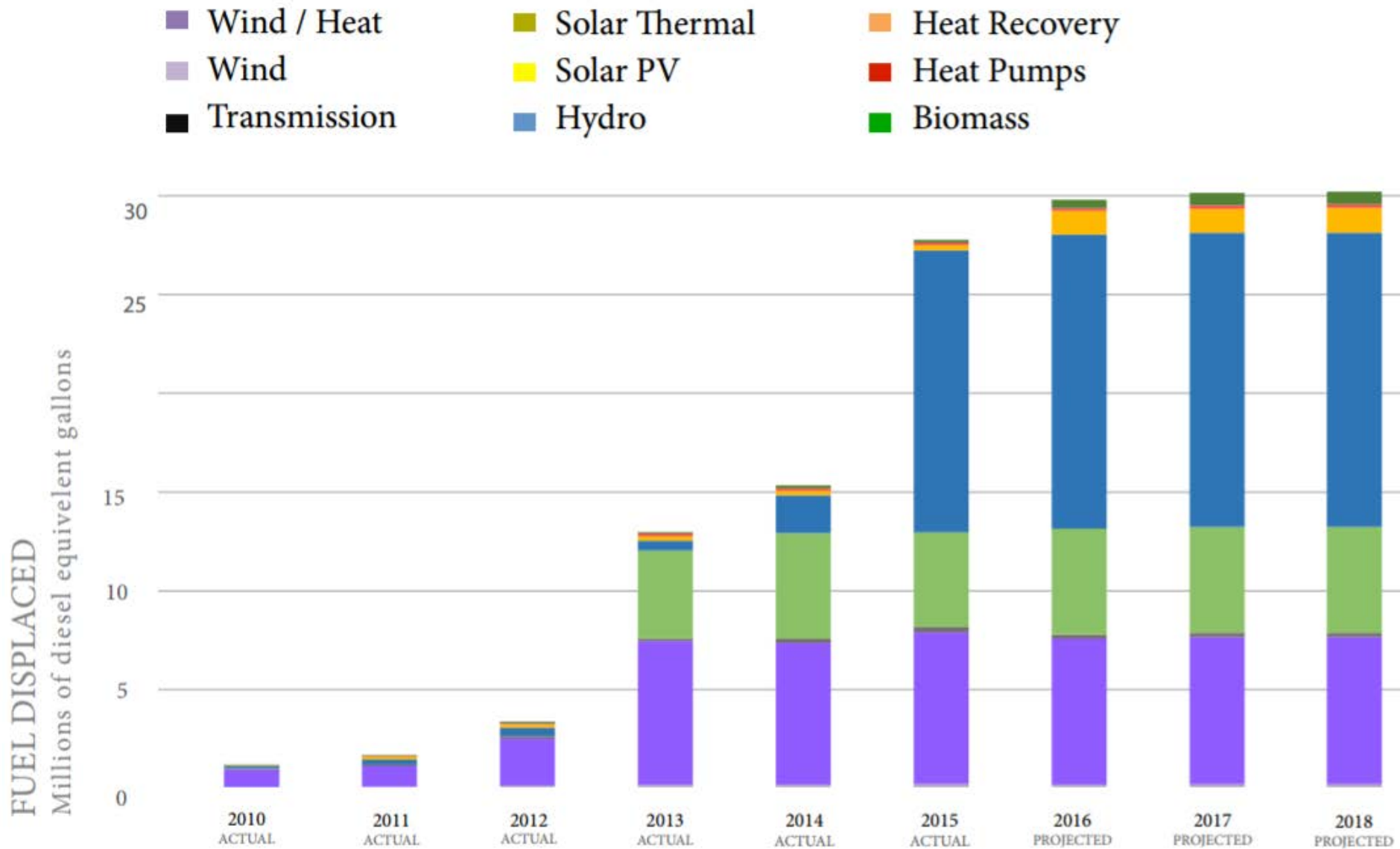
# FUNDED GRANTS BY ENERGY REGION (\$ millions)

## ROUNDS I-VIII





# Renewable Energy Fund: Annual Fuel Savings





# AEA Funding in Southeast (FY15-present)

- 35 projects
- \$101M State, \$7M Denali Commission
- Mostly Renewable Energy
- Rural Power Systems
- Bulk Fuel
- Energy Efficiency
  
- 28% of funding still in the pipeline

# Southeast Projects Completed (Sample)

# Hoonah, Gartina Falls







# Hoonah, Gartina Falls







# Sitka, Blue Lake Expansion





# Gustavus, Falls Creek





# Other Projects Completed

- Whitman Lake, Ketchikan
- Snettisham Transmission, Juneau
- North POW Intertie
- Thorne Bay School Biomass
- Haines Central Wood Heating
- Juneau Ground Source Heat Pump
- Juneau Aquatic Center GSHP
- Edna Bay Bulk Fuel Facility
- Kasaan Bulk Fuel Facility
- Yakutat Diesel Powerhouse
- Hoonah Heat Recovery
- Energy Efficiency Yakutat (VEEP)
- Sitka Centennial Hall & Library Air Source Heat Pump

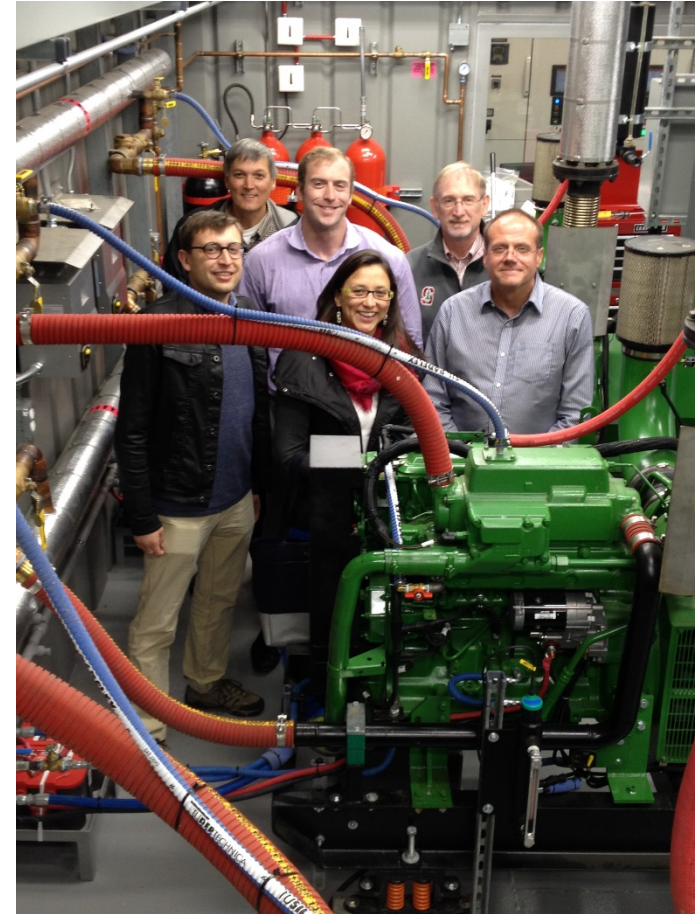


# Projects in the Pipeline

- Thayer Lake, Angoon
- Hiilangaay (Reynolds), POW
- Hoonah Biomass District Heat
- Kake Diesel Powerhouse
- Kake Bulk Fuel Facility
- Gunnuk Creek, Kake??
- Indian River Hydro, Tenakee Spr.
- Angoon THRHA Pellet Heating

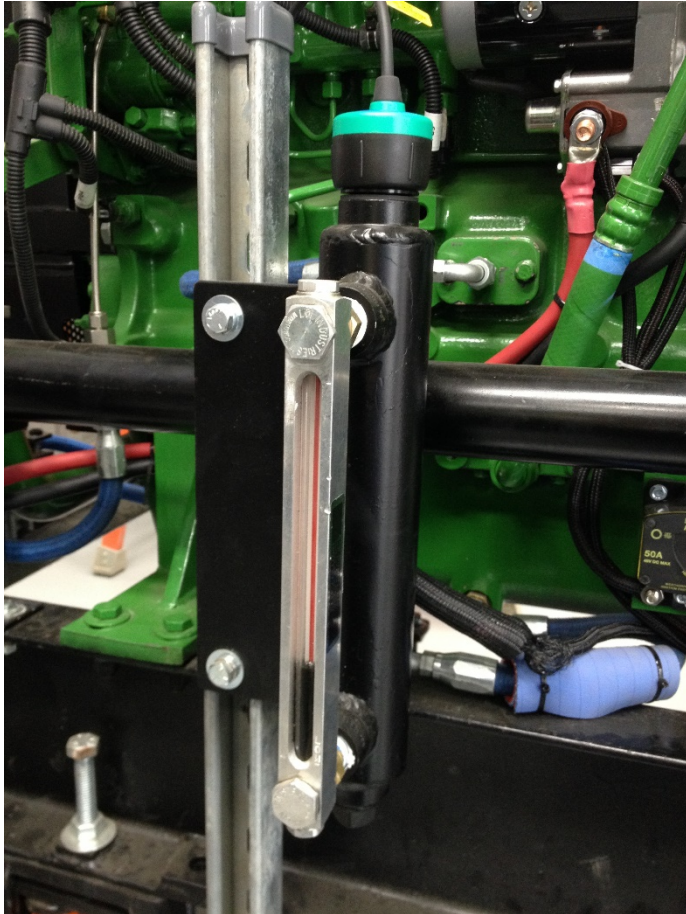


# Kake Powerhouse Module





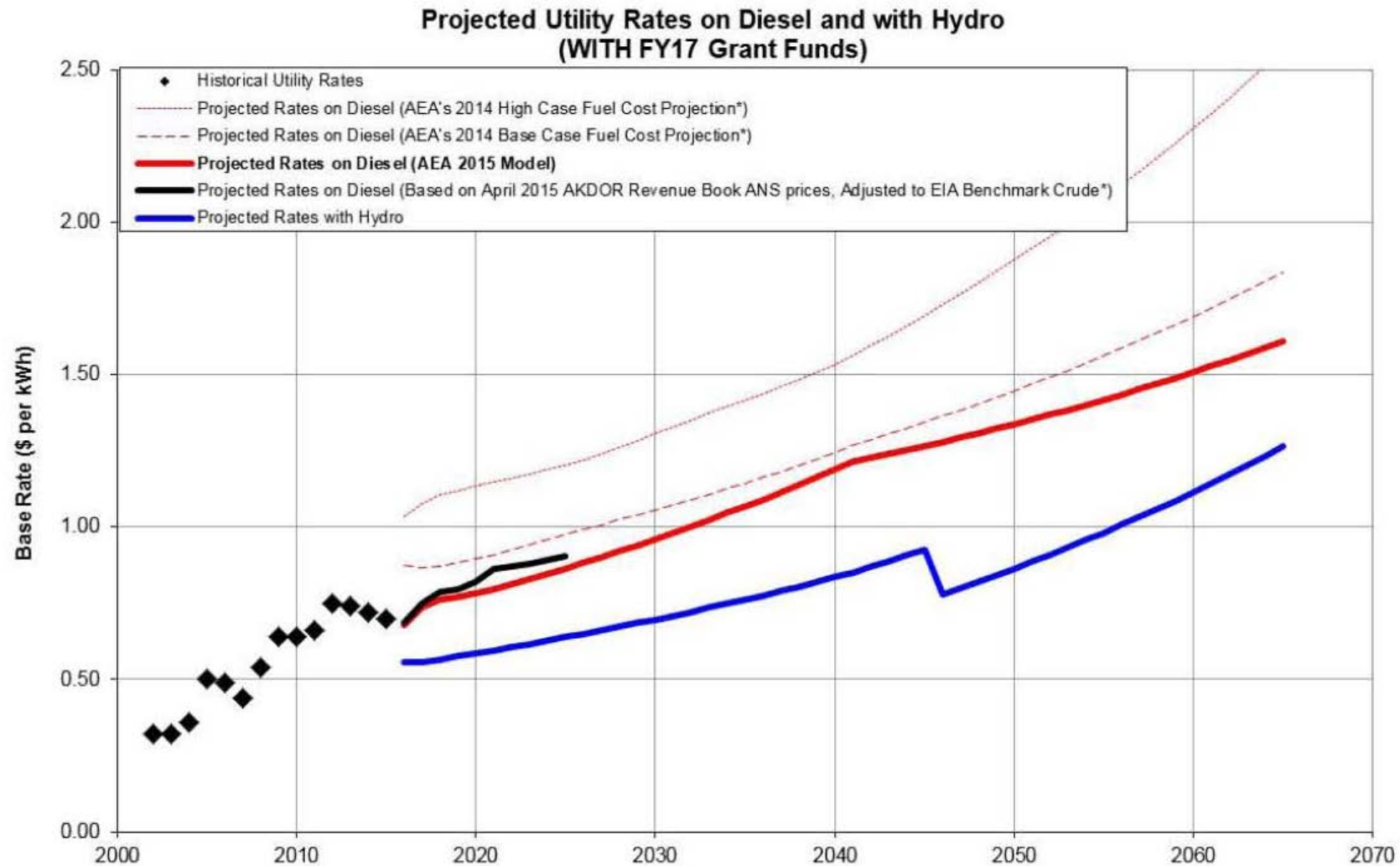
# Powerhouse Innovations



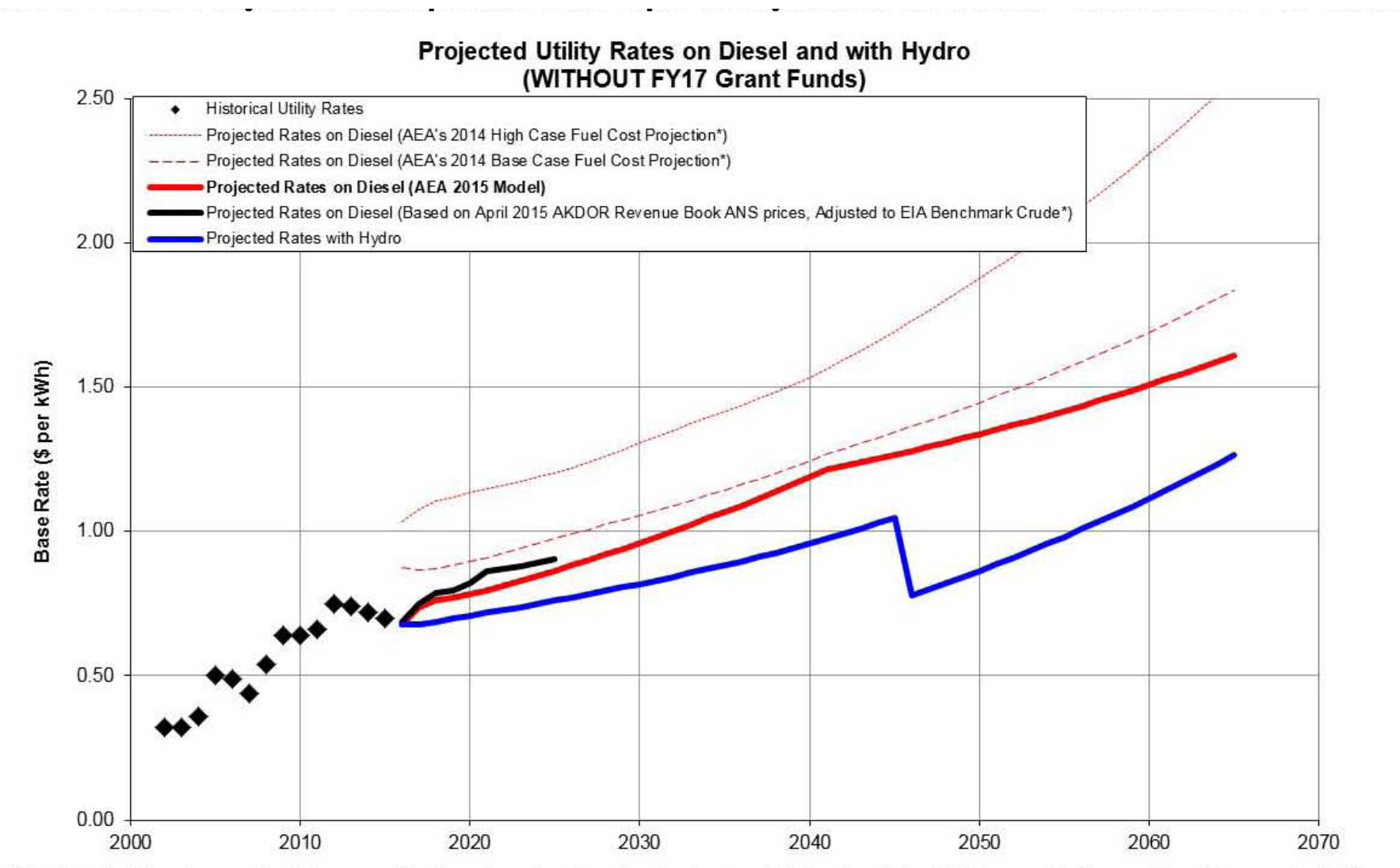
- Oil level sensor example
- Prior had high failure rate
- Prior was high or low alarm
- New is ultrasonic
- Always indicates fill level
- Can trend fill level
- Mounted to floor to reduce vibrations
- One of many innovations

# Financing Projects

# Hydro can be a smart investment decision – with grant funds



# And without



# Example: Pelican



650 kW run-of-river

Powers entire community

\$61,000 loan to match DOE and REF grants



# Example: Hiilangaay, POW Island



- Project development through REF grants
- Construction financed \$20M PPF loan from AEA



# Example: Waterfall Creek, King Cove



- 375kW run-of-river
- 1,000 MWh/yr
- 75,000 gallons of diesel saved per year
- Renewable Energy Fund and
- \$1.9M Power Project Fund Loan

# Example: Allison Creek, Copper Valley Electric



\$23M REF and State Grant  
\$32M debt financing  
Displaces 700,000 gal fuel annually

# Current News

- Renewable Energy Fund
  - Recommending same 39 projects from last year
  - None were funded last year
  - 9 of 39 from Southeast
    - 4 hydro
    - 3 biomass
    - 2 heat pump
- Emerging Technology Fund
  - Soliciting for targeted scope
  - Solve an integration issue with potential widespread benefit
  - No new funding, returned/unused funds

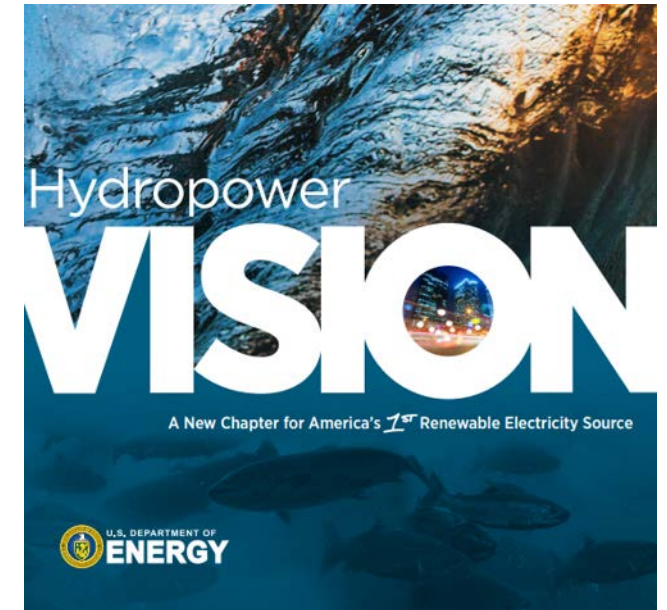
# The Alaska Affordable Energy Strategy

- Preliminary findings relevant to Southeast:
- LNG use in southeast does not currently appear feasible
- Energy efficiency is an opportunity
- ASHP underutilized in some communities with:
  - Low cost of power
  - Excess hydro capacity
- Biomass: pellets appear to have lower operating cost than cordwood, but cordwood operational costs are local jobs
- AkAES provides **data-driven** decision making



# Other AEA Activities

- Commercial Property Assessed Clean Energy (C-PACE)
- Volkswagen Settlement
- Hydropower Vision Report from DOE
- Other states using creative policy & financial tools
  - On-bill financing
  - Voluntary solar gardens
  - Offshore wind
  - Energy Efficiency Resource Standards



# Link between PCE and AEA programs

- AEA's programs are all oriented around our mission:

## **Reduce the cost of Energy in Alaska**

- By providing AEA's services, energy costs are lower:
- Without AEA's services, technical problems would lead to expensive emergencies or equipment damage
- Every day we field calls that avert larger expenses in the future
- Those expenses would raise energy rates for customers, which would raise the cost to the Power Cost Equalization program.
- PCE covers 2/3 of kWh sales in 193 PCE communities



# AEA assistance to Diomedede power outage

- Last Friday morning learned of emergency power outage
- Phones down too
- AEA lined up a contractor to dispatch if no phone established
- Community used portable generator to get phones up to call AEA
- Resolved by phone by 9pm Friday evening
- Saved thousands through technical assistance by phone

# AEA Today and Tomorrow

- AEA small organization with large mission
- AEA's operations and projects significantly impact cost of energy in communities
- Positive impact to Power Cost Equalization program costs
  - PCE is fully endowed
  - 193 PCE communities
  - Higher energy costs cause greater burden on PCE program cost
  - AEA's operations and programs keep downward pressure on energy costs
- We are retooling for the new economy

# Thank you

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