Photo by: Cassandra Cerny, GVEA

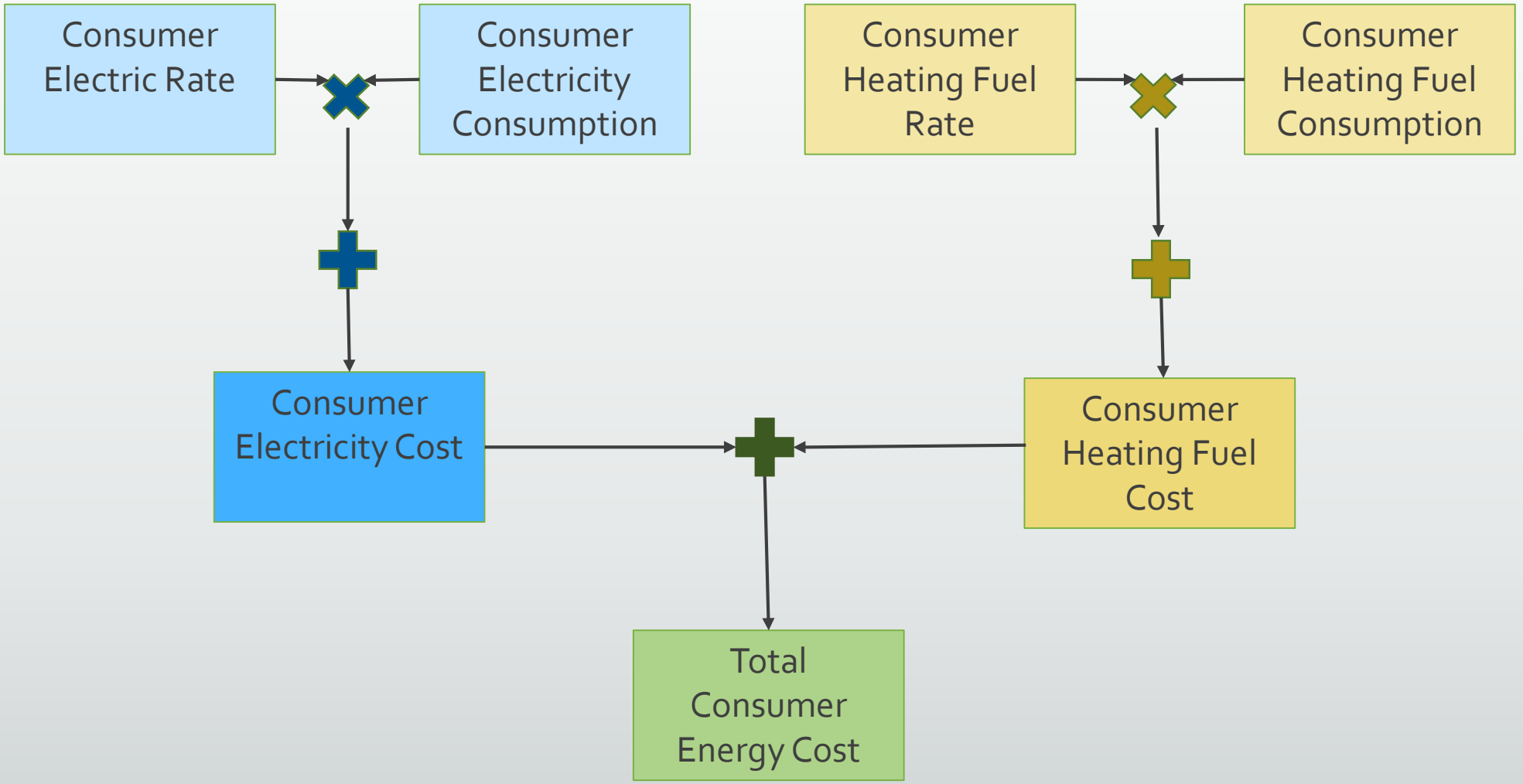
# *Regional Energy Planning Meeting*

## Preliminary Results from Research

Neil McMahon

6/27/2016

# Factors That Lead to Consumer Energy Costs



# Areas of Study for Affordable Energy

## Infrastructure

- Energy Efficiency
- Diesel Efficiency
- Renewable Energy
- Transmission & Interties
- Fuel Delivery Improvements
- Fuel Switching

## Non-infrastructure

- Direct Underwriting (subsidies)
- Management Improvements
- Ownership & Project financing

ALASKA ENERGY AUTHORITY

# Alaska Affordable Energy Model

- Model developed by AEA
- Model being programmed by GINA
- All model results expected to be completed by August
- Scenarios and stress testing to be added
- Community-level detail is available and will be available online
- Most benefits are optimistic
  - Based on EIA forecast for crude oil (higher than current prices)

- Incorporates best available data for:
  - Community housing
  - Community nonresidential buildings
  - Community electricity generation and consumption
  - Resource data
  - Project proposal data
  - Project performance and costs

# Infrastructure Opportunities for Affordable Energy in Communities

Modeled consumption for:

- Heating fuels
  - Residential & non-residential sectors
- Electricity

Modeled generation forecasts:

- Electricity based on current infrastructure

Modeled opportunity for:

- Efficiency
  - Residential, Non-residential, water/wastewater
- Renewables
  - Wind, solar, hydro power
  - Heat Recovery
  - Biomass (cordwood, pellets)
  - Air source heat pumps
- Transmission
- Diesel efficiency

We will be able to compare the potential opportunities in a community to assist the communities in making sound investment decisions

ALASKA ENERGY AUTHORITY

# Summary of Preliminary Model Results

| Project Type | Cost Effective NPV benefits | Cost Effective NPV Costs | Cost Effective NPV Net benefit |
|---|---|---|---|
| Solar Power | $824,000 | $638,000 | $185,700 |
| Wind Power | $191,000,000 | $102,000,000 | $88,000,000 |
| Biomass (Cordwood) | $344,000,000 | $182,000,000 | $162,000,000 |
| Biomass (Pellets) | $290,000,000 | $69,700,000 | $220,000,000 |
| Residential Efficiency | $658,000,000 | $429,000,000 | $228,000,000 |
| Non-residential Efficiency | $1,220,00,000 | $396,000,000 | $824,000,000 |
| Interties | | | |
| Hydropower | | | |
| Heat Recovery | | Still to come | |
| Diesel Efficiency | | | |
| Air-Source Heat Pumps | | | |

Potential for more than $1 billion in investment needed to exploit cost effective projects with a net benefit of more than $1.5 billion

# Affordable Energy Model Outputs

Community-level modeling

- Consumption estimates
- Generation estimates
- Economic evaluations of potential projects
  - Investment needed
  - Benefits

AEA would appreciate assistance in ensuring the model outputs are reasonable for communities

# Project Development & Non-Infrastructure Opportunities Preliminary Results

Improvements possible across the entire project development cycle—for funding agencies, communities, and utilities

1. Initial project selection
2. Coordination between stakeholders
3. Access to financing
4. Project implementation: feasibility through design
    a) Find fatal flaws early, if possible
5. Utility management and project operation

# Significant Opportunity = Significant Investment

- There is more need & more opportunity than can be accomplished through state funds alone
- The state will need to provide new types of assistance to communities to help them access existing state, federal, NGO, and private financing opportunities
- Careful coordination between stakeholders will be needed to deliver the current services with fewer state grant dollars
- Alignment of policy, regulations, and financing/incentives will be needed

ALASKA ENERGY AUTHORITY

# Opportunity Afforded by AkAES

- Provides a foundation and requirements to suggest statutory changes
- Improve operational efficiency for AEA, other governmental & non-governmental actors
  - Financial
  - Project evaluation
  - Project selection
- Improve coordination
  - Integration and sharing of data and information

<u>AEA will be able to serve communities better</u>

# AKEnergyAuthority.org