ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM

Energy Efficiency in Community Buildings

"Partnering with rural communities to make public health services more affordable by reducing energy costs"

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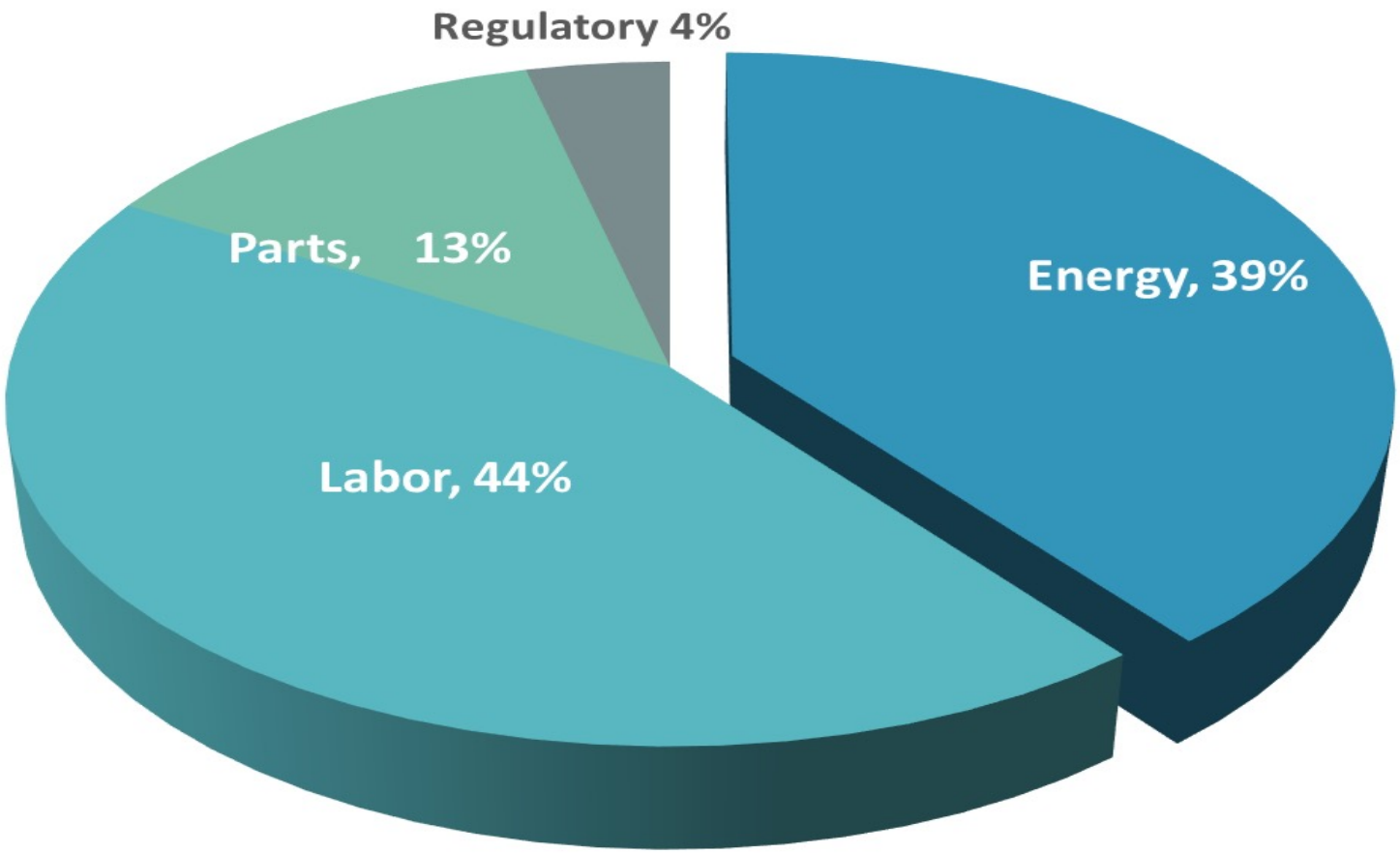
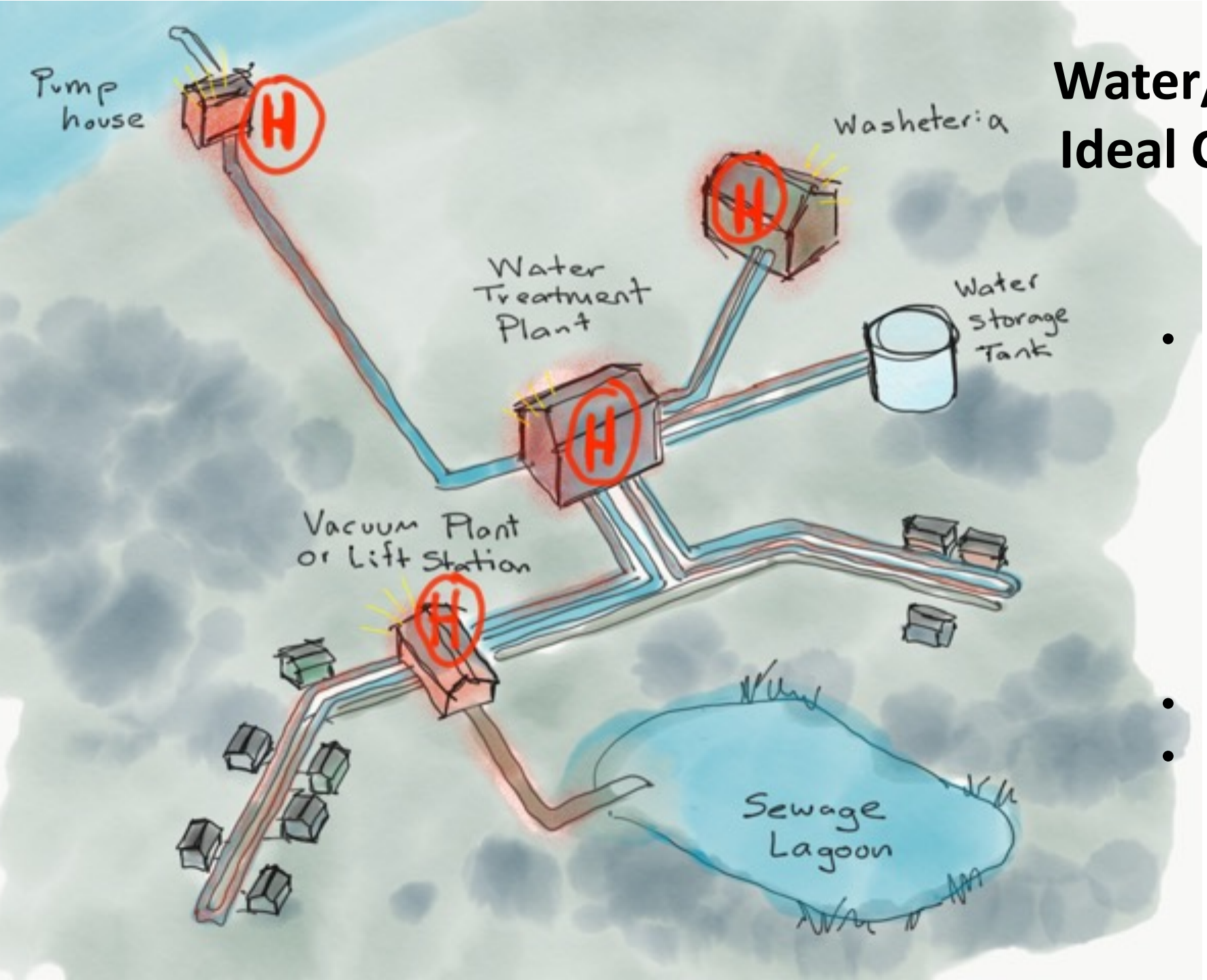
The Importance of Energy in Wat/San System Affordability





Water/Sanitation Facilities - Ideal Candidates for Energy Projects

- High opportunity to save
  - High heating loads – freeze prevention, space heat, dry clothes
  - High electric loads - pumping, circulation, old lighting, heat tape
- Aging components
- Savings may be passed on to community members

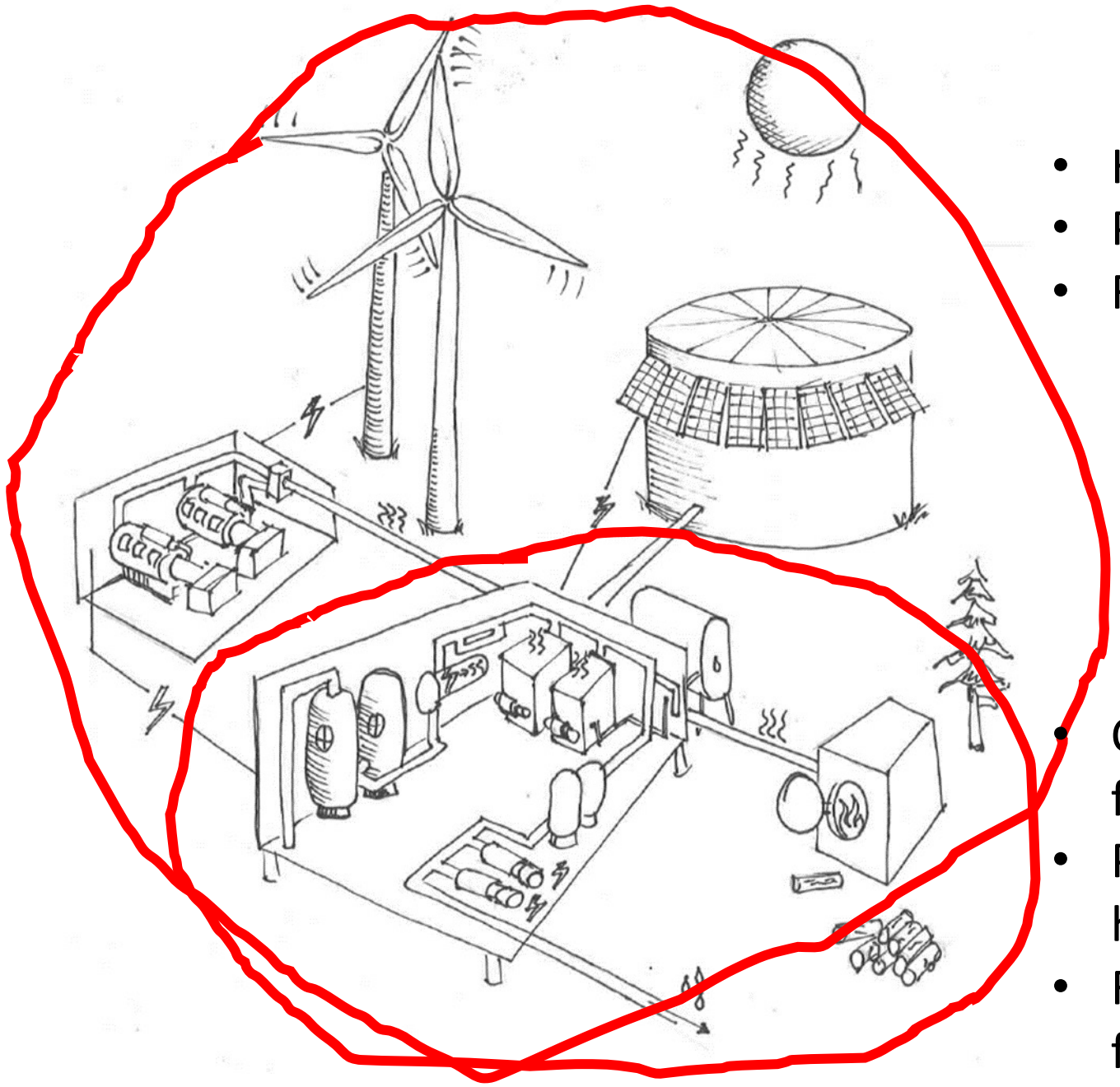
Reduce Heating and Electric Costs

- **Use less electricity**
  - Replace old bulbs with LEDs
  - Optimize controls, operate only when needed
  - Replace old with new, energy efficient versions
- **Use less heat**
  - Turn heat down when building is unoccupied
  - Weatherize to reduce heat loss
  - Add only as much heat to water as needed
- **Produce heat more efficiently**
  - Clean/service boilers for best heat transfer
- **Incorporate sustainable sources of heat and electricity**
  - Heat recovered from diesel gensets
  - Heat from biomass fuel
  - Electric heat from excess renewables
  - Electricity from solar panels

Example: Chevak, AK

Above ground pipeline, vacuum sewer system serving 1,074 people. WTP and Vacuum Plant were energy audited in 2012-2013.

	Savings ($/yr)
• Smaller retrofits	
• Reduce circulation to 9 months/yr	$ 5,460
• Reduce raw water heating	$ 4,550
• Automate heat tape operation	$ 455
• Replace 38 bulbs with LEDs	$ 230
• Recommission controls, VP	$ 7,500
• Larger retrofits	
• 2012: Install new vacuum pumps	$17,000
• 2013: Replace oversized boilers	$ 8,000
• 2015: Install Wind-to-heat boiler	$ 4,000
• 2020: Install heat recovery system	$48,000



- Heat recovery ratios for common gensets
- Performance of existing systems
- Facility to System view
  - Renewable/storage impact on recovered heat?
  - Sizing renewables for multiple objectives
  - Parallel operating renewables on small grids
- Centering non-economic factors in project fundability
- Putting $$ values to environmental and health benefits, resiliency
- Renewable powered cooling of foundations

THANK YOU!

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