

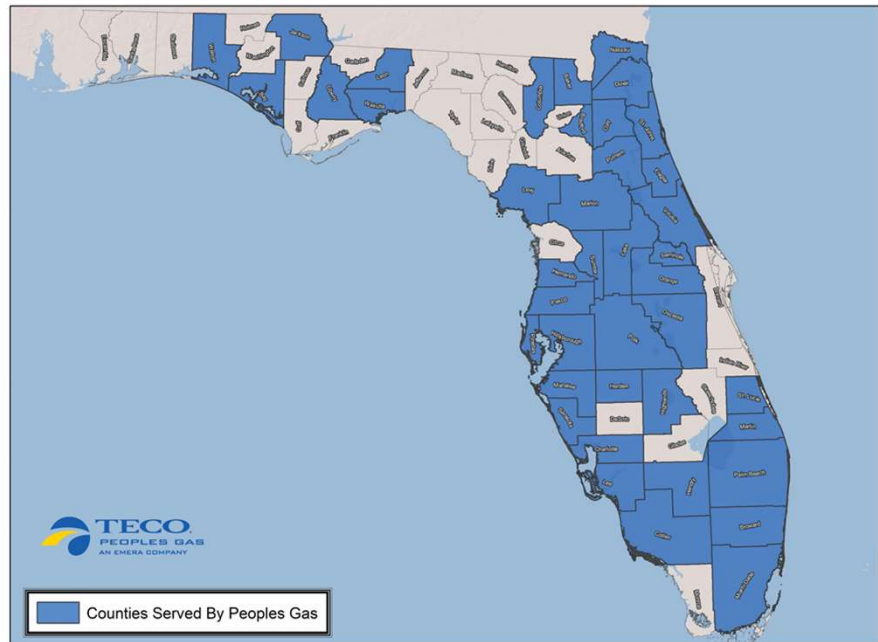


**SMARTER.  TOUGHER.**

**for  
Multifamily Homes**

# TECO Peoples Gas

- An affiliate of Emera Inc., a geographically diverse energy and service company.
- An Emera family that includes electric and natural gas utilities across North America and the Caribbean.
- Florida's largest natural gas provider, with service in most metropolitan areas to reach more than 400,000 customers.



# About Natural Gas

- Lighter than air.
- Regulated by the Florida Public Service Commission.
- Delivered as a gas in underground infrastructure of pipes: gas mains.
- Measured in Therms.
- Different than propane - which is: liquefied, transported in tanks and sold by the gallon.



# Natural Gas is Smarter, Tougher.



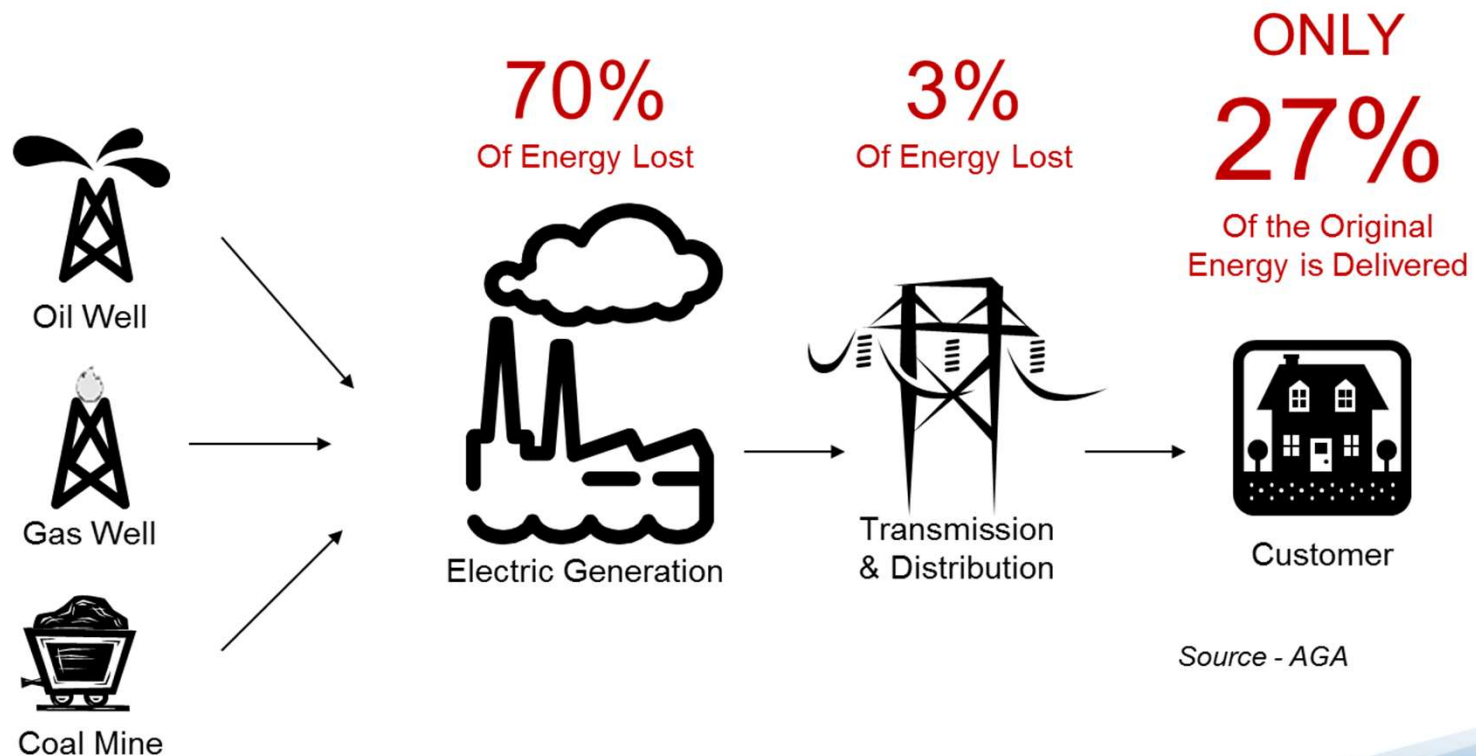
Smarter = Energy efficient.



Tougher = Resilient.

# Natural Gas is Smarter.

## Generating and Delivering Electricity



# Natural Gas is Smarter.

## Delivering Natural Gas

100%  
Original Energy



Gas Well

Less than 10% energy loss during transmission

90%

Of the Original Energy  
is Delivered



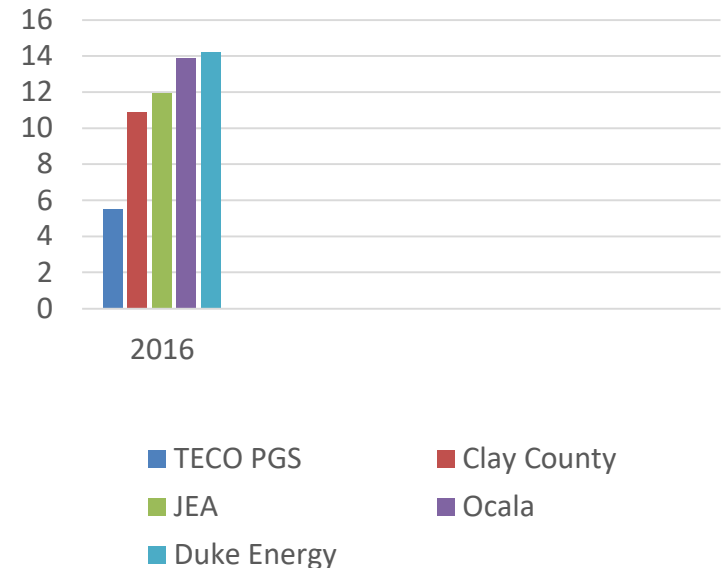
Customer

Source - AGA

# Efficiency: Natural Gas Rates

Rate comparison for TECO Peoples Gas and Florida electric utilities:

- 5.5¢ kwh TECO Peoples Gas natural gas
- 10.9¢ kwh Clay County
- 11.9¢ kwh JEA
- 13.9¢ kwh Ocala
- 14.2¢ kwh Progress Energy



# Efficiency: Tankless Water Heating

- Up to 50% more energy efficient than electric tank.
- Heat water only when needed, cutting energy costs and recovery time.
- Reduce square footage required for tank.
- Eliminates need for water storage, reducing risk of leaking/flooding.





# Building Design Challenges



# Multifamily Prototype Design Assumptions

- Each was modeled as a three-story building
- Eight apartments per floor
- 950 sq. ft./apartment
- One unit as an office

This square-footage was chosen based on information from the Energy Information Administration (EIA) Residential Energy Consumption Survey



# Multifamily Prototype

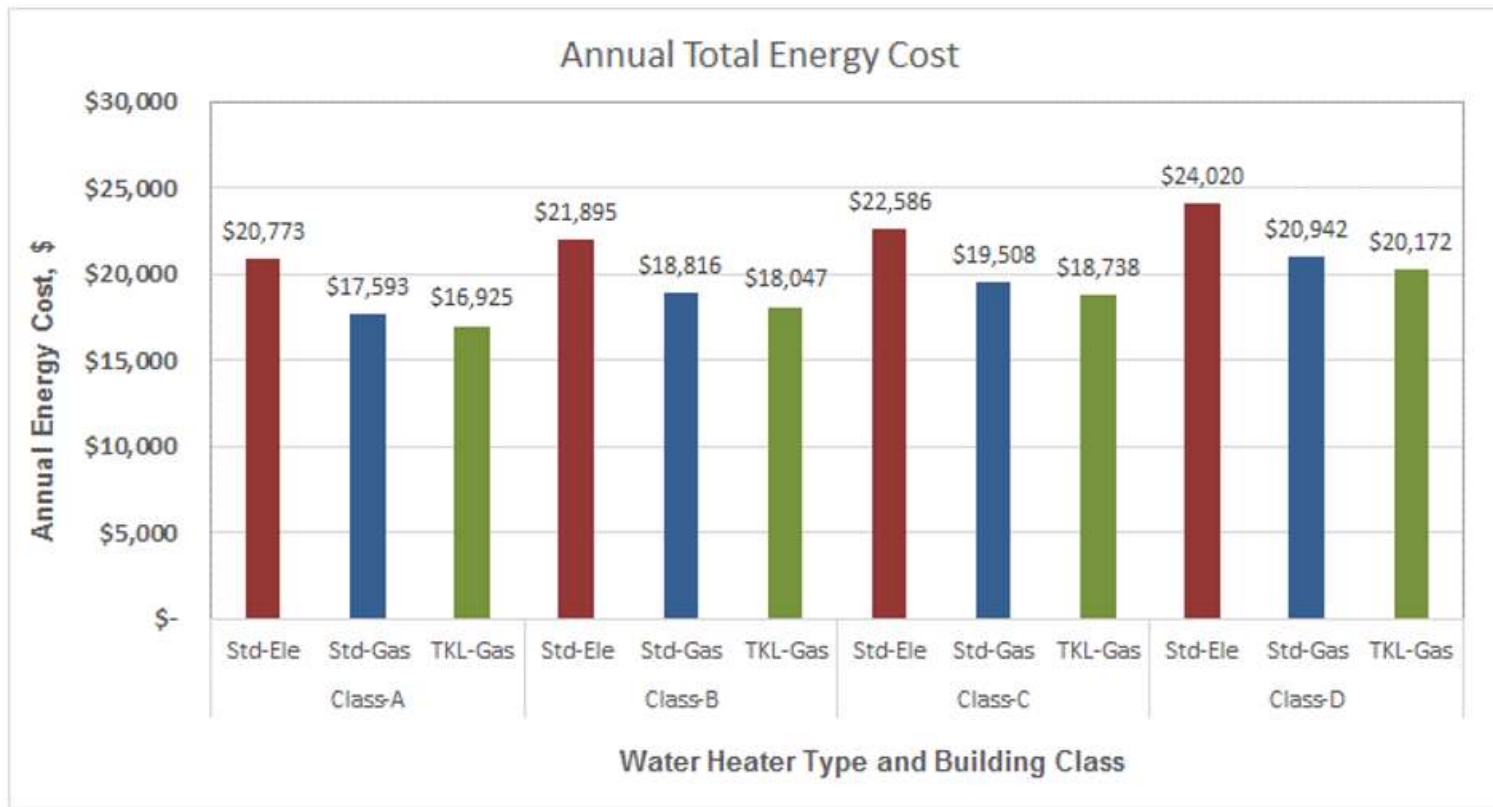
## Design Assumptions: Water Heating

### Water heating system types and model inputs assumption

Water Heat Type	Volume, gal	Hot Water Use, gallons/day	Class A UEF (EF)	Class D-B UEF (EF)
Standard Gas Tank	40	34.4	0.58 (0.60)	0.56 (0.58)
Gas Tankless	1	34.4	0.81 (0.81)	0.81 (0.81)
Standard Electric Tank	40	34.4	0.92 (0.92)	0.92 (0.92)

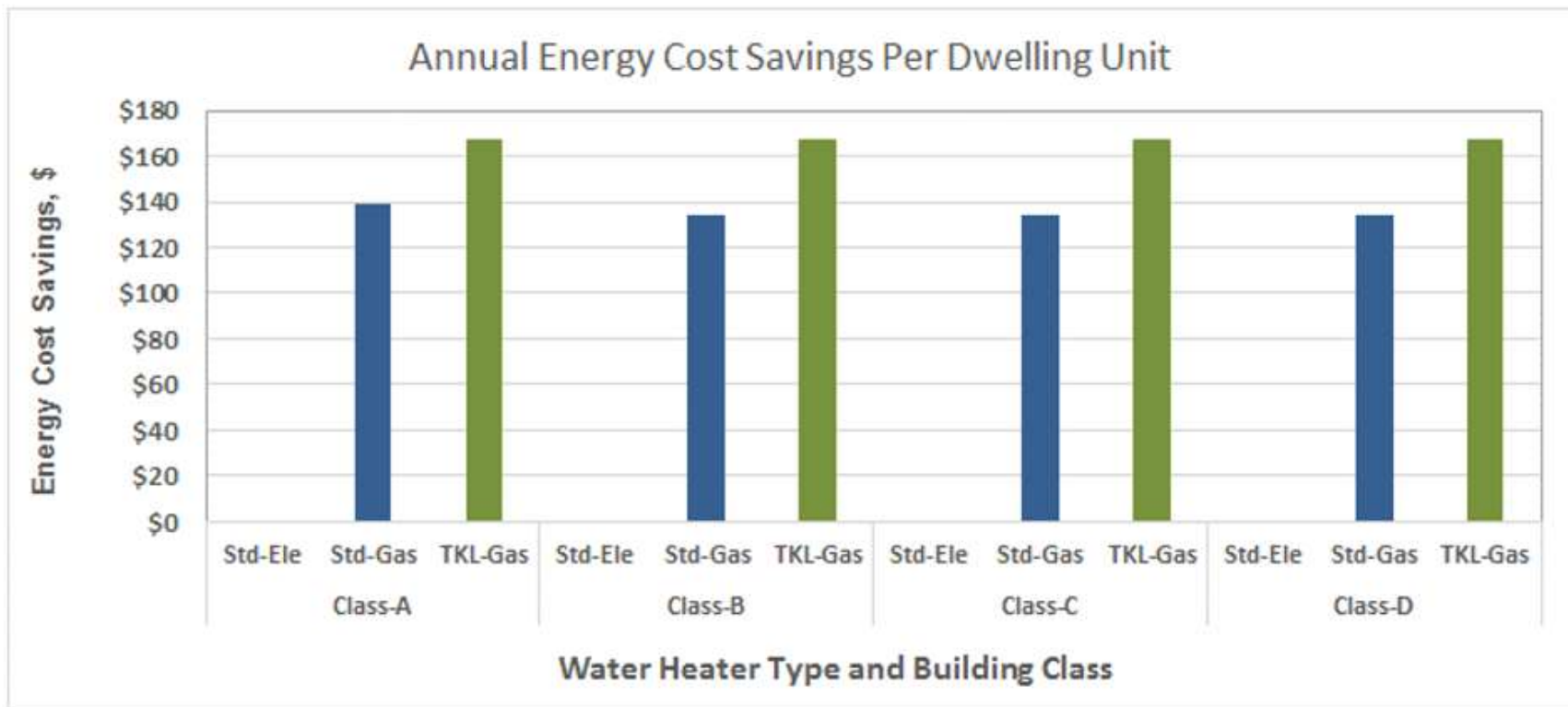
# Multifamily Prototype

## Design Assumptions: Water Heating



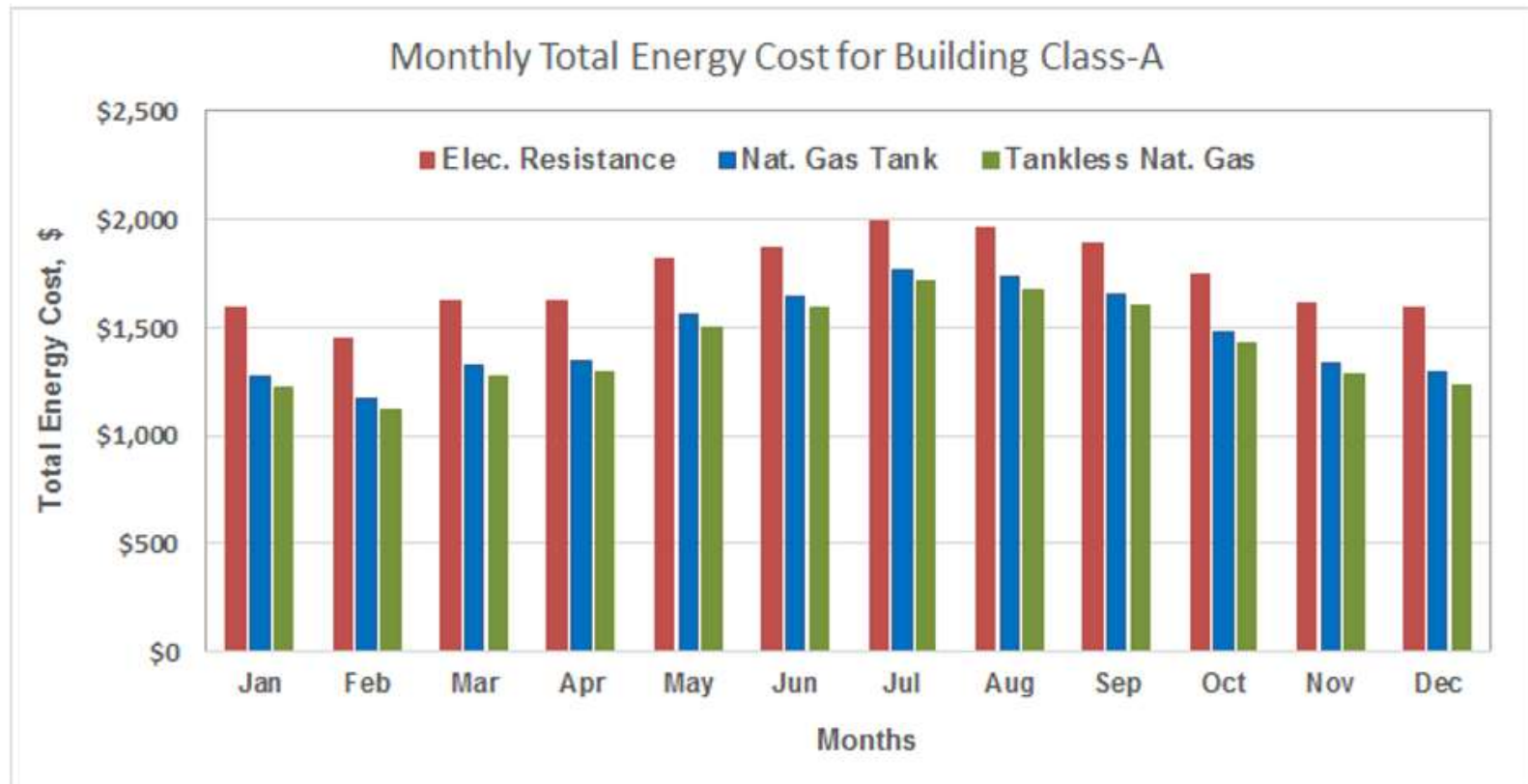
# Multifamily Prototype

## Design Assumptions: Water Heating



# Multifamily Prototype

## Design Assumptions: Water Heating



# Multifamily Prototype

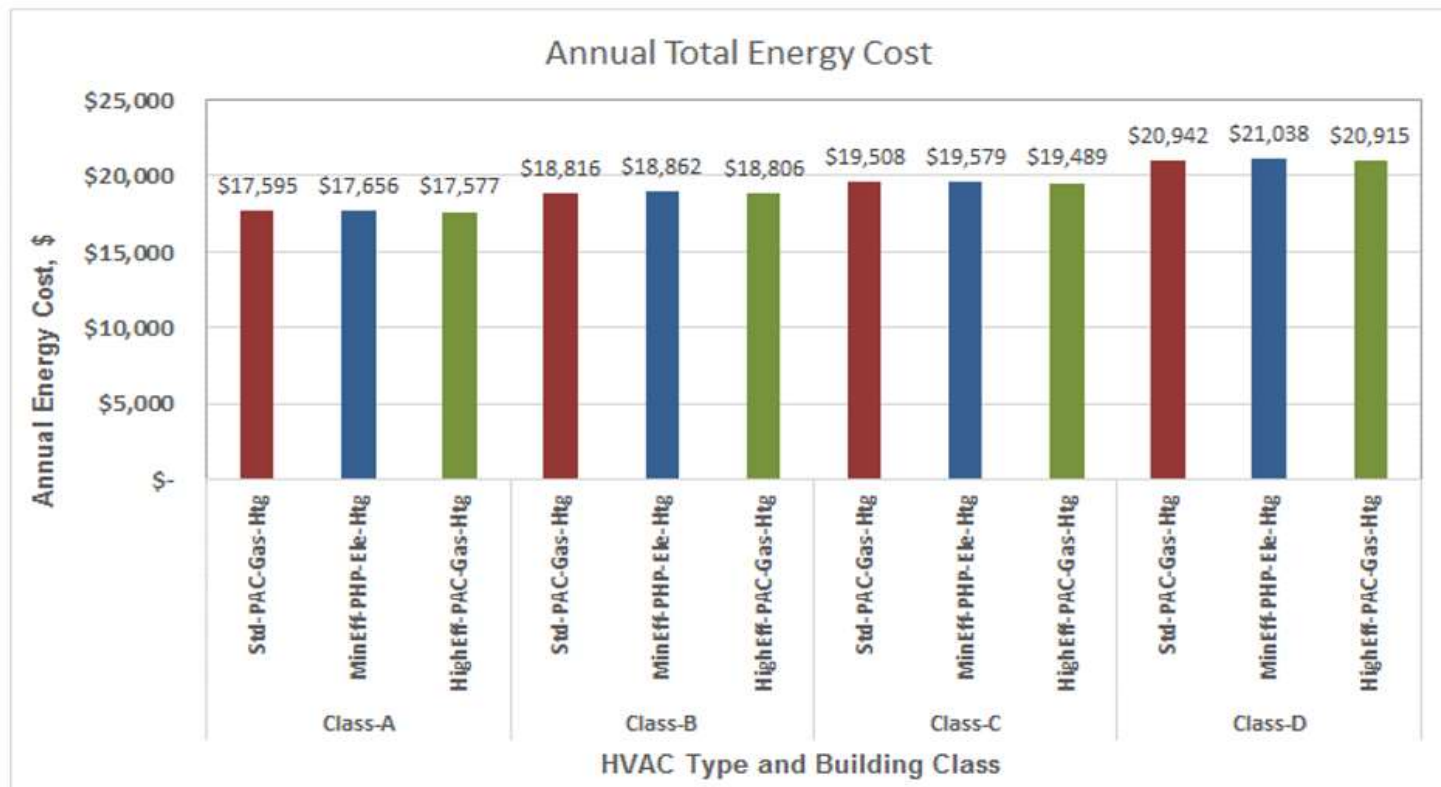
## Design Assumptions: Space Heating

### Space heating system efficiency

Space Heating System Type	Furnace Efficiency, %	Heat Pump Efficiency, HSPF	Class A Water Heating Efficiency, UEF (EF)	Class B-D Water Heating Efficiency, UEF (EF)
Standard Gas Furnace	80		0.58 (0.60)	0.56 (0.58)
High Efficiency Furnace	95			
Min Efficiency Electric Heat Pump	-	7.7		

# Multifamily Prototype

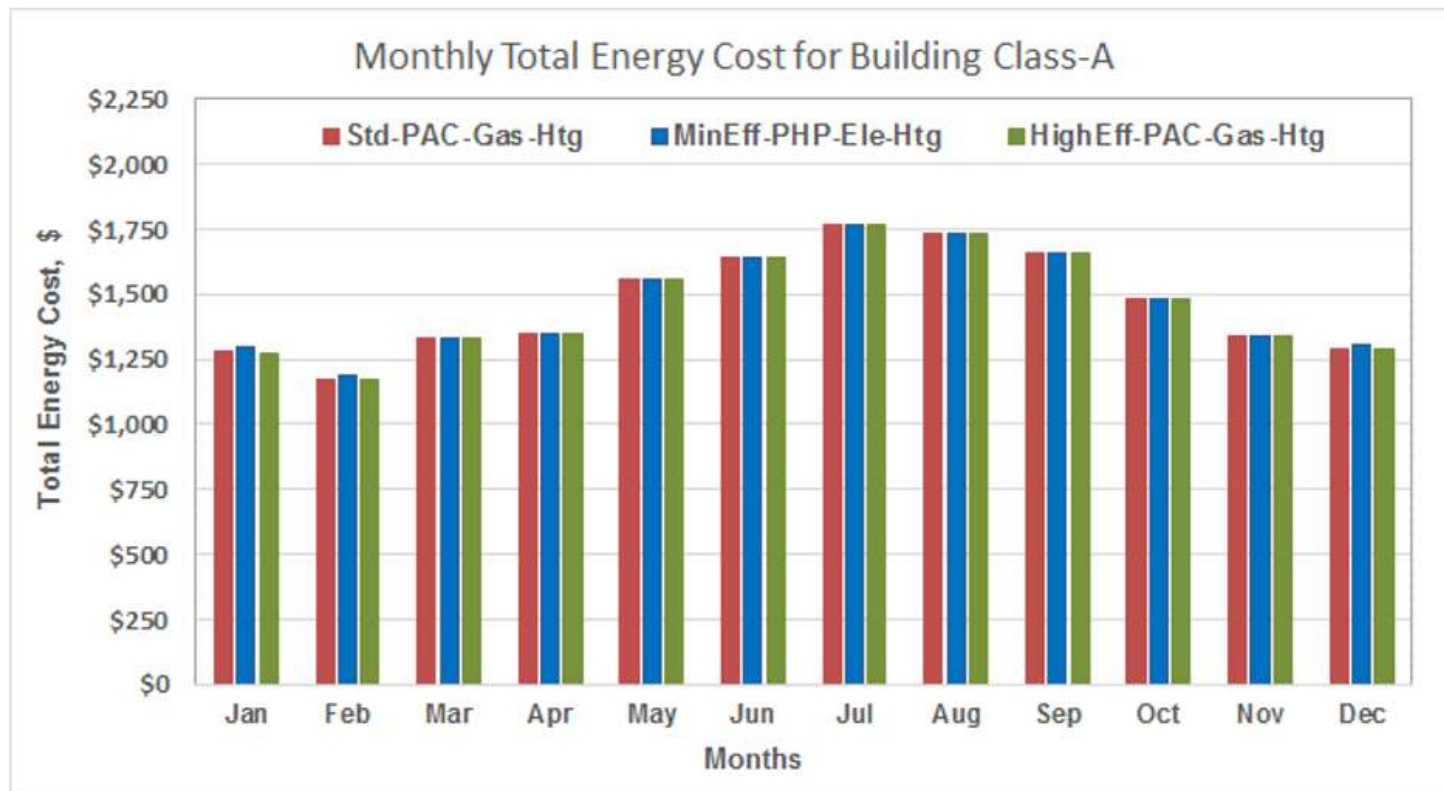
## Design Assumptions: Space Heating





# Multifamily Prototype

## Design Assumptions: Space Heating



# Natural Gas is Tougher.

## HURRICANE MICHAEL, 2019

- Maximum sustained wind speeds of 161 mph
- At least 74 deaths
- Power lost to 1.7 million electricity customers across six states

## HURRICANE IRMA, 2017

- Maximum sustained wind speeds of 112 mph
- At least 84 deaths
- Power lost to 7.7 million electricity customers across Florida alone – 73% of the state

# Natural Gas is Tougher.

How tough, or resilient, are current facilities?

- Storm hardening practices
- Building design
- Equipment

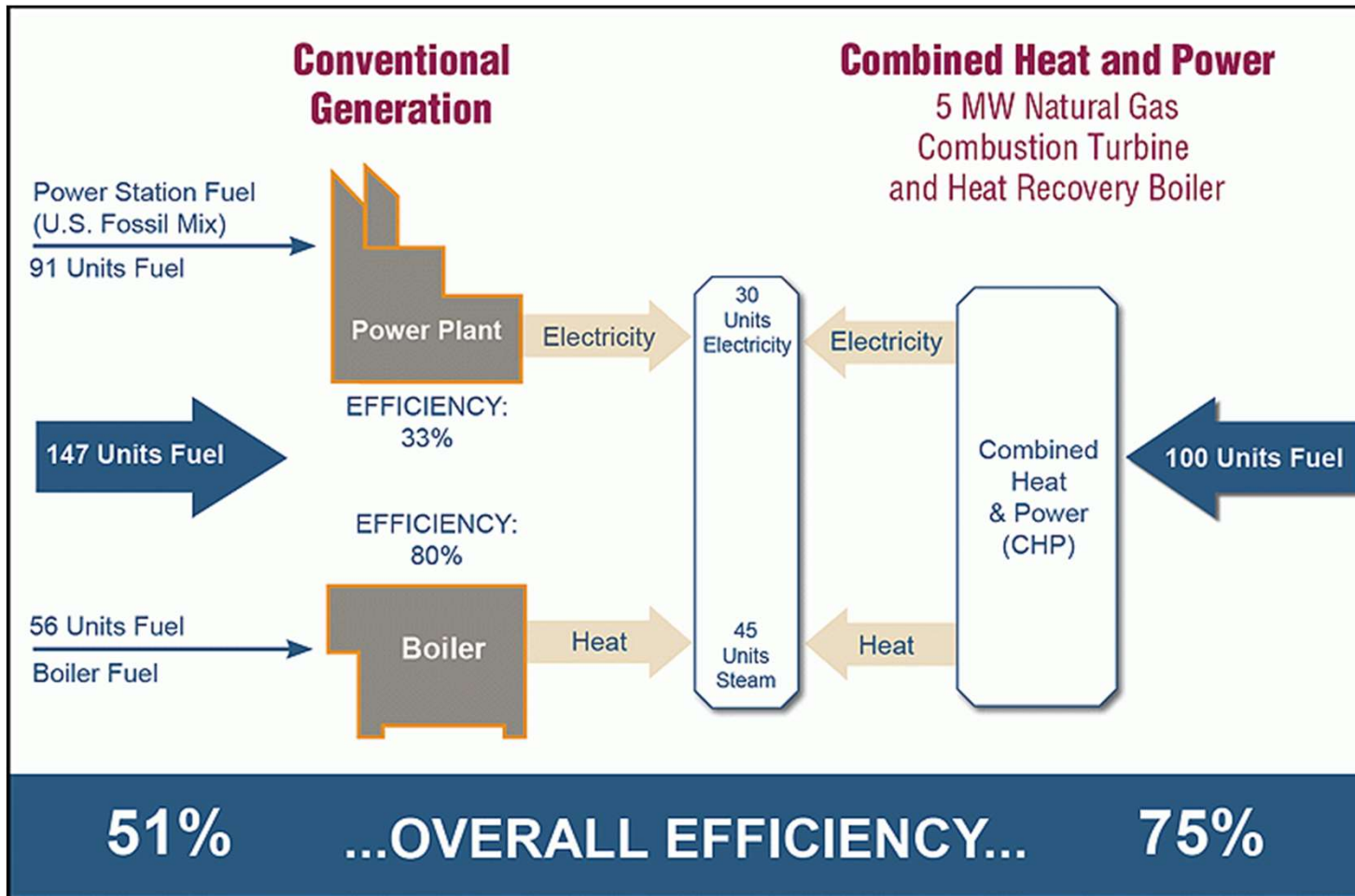
What resiliency improvements are possible? To start, consider offloading as much as possible from the electric grid.



Have you looked at **Natural Gas** lately?



# Resiliency: Combined Heat and Power



# Resiliency: Microturbine Overview

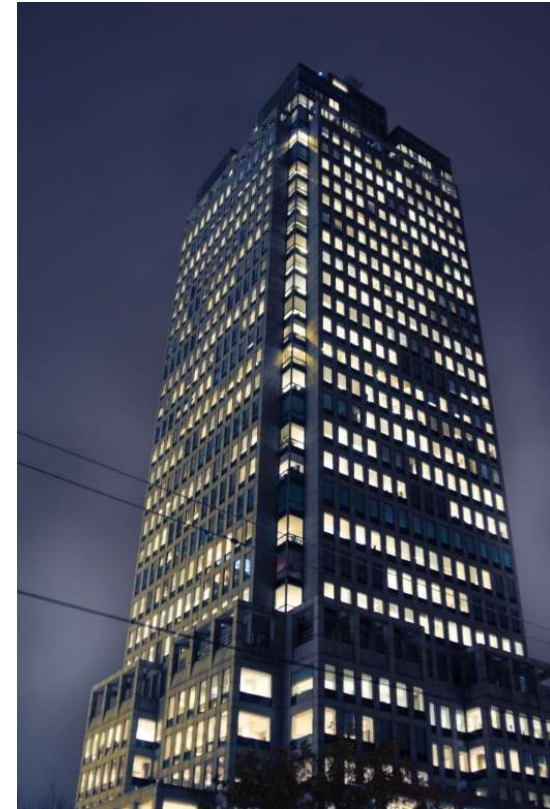
- Small combustion turbines that burn gaseous or liquid fuels to drive an electrical generator
- Commercially available for more than a decade
- Range in size from 30 to 330 kilowatts (kW)
- Integrated packages consisting of multiple microturbine generators are available up to 1,000 kW



# Multifamily Prototype

## Design Assumptions: CHP

- Assisted living facilities by law are required to have an on-site backup generator to provide electric power in emergency situations.
- A multifamily prototype was developed and analyzed (based on assisted living facilities) using an electric load center model to manage the operation of an electric generator to the prototype building energy model.
- The electric load center dispatches the CHP unit per a predefined operation scheme.
- The CHP's heat recovery system is integrated to the service water heating system.



# Multifamily Prototype

## Design Assumptions: CHP

### Assisted Living Facility Model Annual Costs

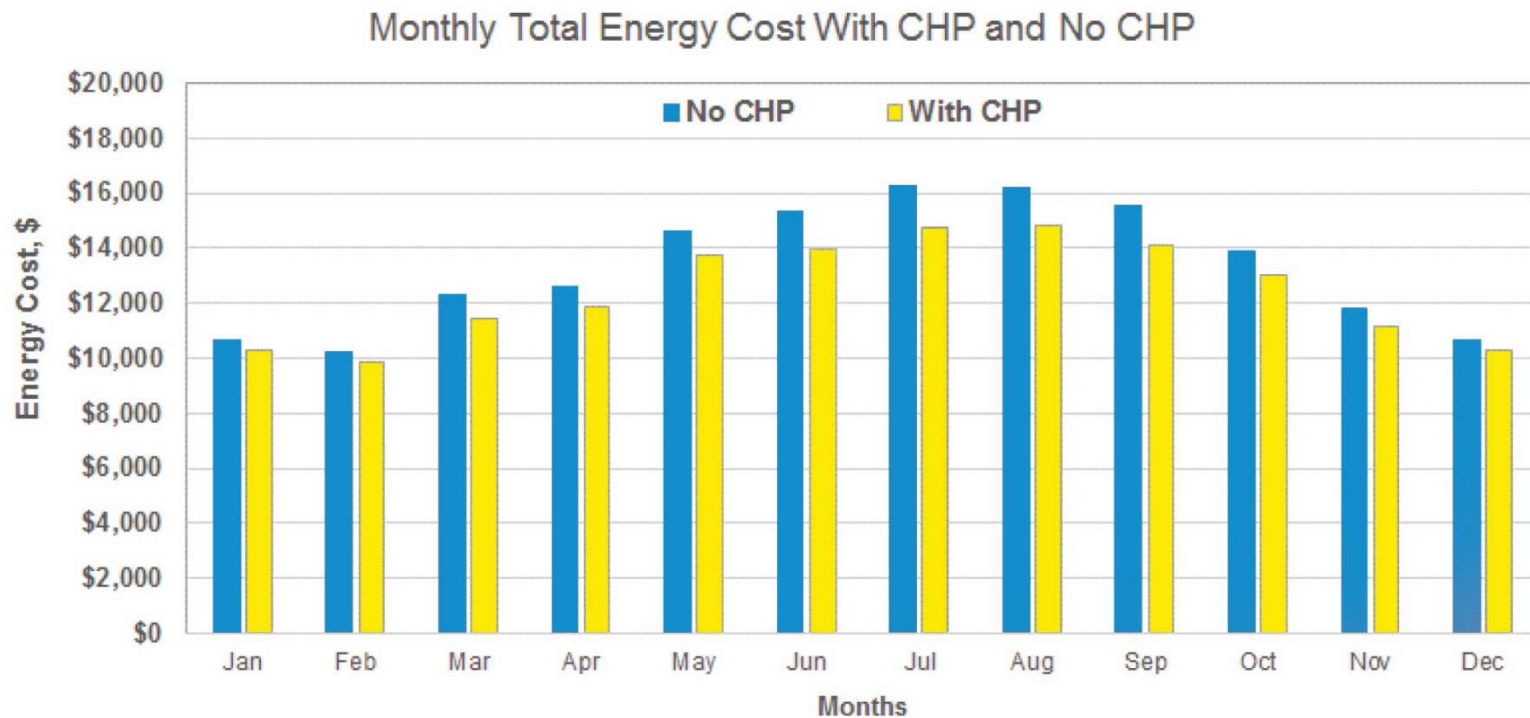
Baseline Mode with and without CHP	Total Electric Energy Cost, \$	Total Natural Gas Cost, \$	Total Energy Cost, \$
Without CHP	145,390.81	14,638.23	160,029.03
With CHP	118,985.05	30,317.89	149,302.94



# Multifamily Prototype

## Design Assumptions: CHP

### Assisted Living Facility Model Monthly Costs



# Rebates: New Construction

Natural Gas Appliance	Rebate Per Unit
Storage Tank Water Heating	\$350
High-Efficiency Storage Tank Water Heating	\$400
Tankless Water Heating	\$550
Heating	\$500
Cooking	\$150
Clothes Drying	\$100
<b>Maximum Rebate Per Residential Unit</b>	<b>\$1,300</b>

Have you looked at **Natural Gas** lately?

