

Family Energy Profile: Houston, Texas

Annual Energy Cost: \$5,800

Average summer temperature: High: 35°C (94°F) Low: 23°C (74°F)

Average winter temperature: High: 17°C (62°F) Low: 5°C (41°F)

Felix's house has an old solar energy system to heat water, but it doesn't work well at night or in cool weather. As a result, they also have an electric water heater. When the solar was installed, additional insulation was put in the walls and ceiling. A solar expert told them that if they updated the water-heating system, it would cost about as much as it would to install it from scratch.

The furnace burns heating oil, and the house has central air conditioning. A large portion of the family's electric bill is for air conditioning because the house is in a sunny location with few trees or vegetation. It is a 20-year-old system but still works fine. Felix doesn't think his parents would do the work for the improvements themselves.

Improvement	Cost of materials (dollars)	Cost to install (dollars)	Annual energy savings (dollars)
Programmable thermostat	70	100	190
Dual-pane wood-frame windows, argon gas (throughout house)	3,000	600	400
Seal windows, doors, ducts	400	230	80
Solar panels (at the home)	20,000	5,000	2,200
Wind power (at the home)	10,000	6,000	1,900
High-efficiency electric heat pump	1,600	230	540
Energy Star gas furnace	3,300	2,400	620
Efficient oil furnace	4,000	2,000	390
High-efficiency central air conditioning	5,500	2,000	35
Energy Star single-room air conditioner	300	100	10
Energy Star electric water heater, tankless	4,500	1,000	1,400
Energy Star gas water heater (includes gas line)	2,000	1,750	540
Compact fluorescent lights (high-use lights)	96	20	70
Energy Star refrigerator/freezer	1,800	80	10
Energy Star washing machine	900	80	60
Energy Star clothes dryer	800	80	50
Energy Star dishwasher	330	90	20
Deciduous trees and shading vegetation	400	100	50