



## Cultivating Sustainable Community, Livelihood, Technology and Culture

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### Choosing Sustainability

#### NVI Studies Energy Savings Possible for American Families Making Sustainable Choices

Some Americans have become aware of the need to reduce fossil fuel energy consumption in their homes and vehicles to improve national security, save money and slow Global Warming. Fuel-efficient vehicle sales have soared, and interest in sustainable lifestyles has been growing. If more people understood just how much of a positive impact their choices in home design, neighborhood selection and transportation options could have on their own quality of life and environment, even more people would choose sustainable living.

Toward this end, New Village Institute has commissioned two studies designed to calculate the energy savings for a family choosing to live in an energy efficient home within a mixed-use, walkable community such as the new Oshara Village now under construction in the Santa Fe Community College District. This "real world" comparison shows that by consciously adopting the standard features available off the shelf today in the Oshara Village, a family can save significant amounts of fossil fuel-based energy, reduce Greenhouse Gas emissions and save money in the process.

#### Home Energy Use

The first study examined a 2,000 square foot Oshara Model Home that incorporated energy-saving features in the building envelope, Energy Star-rated lights and appliances, passive solar orientation for space heating, an efficient boiler-fired in-floor radiant heating system, a modern catalytic wood-burning stove, and solar hot water heating. Solar electric (PV) panels were not included in the Oshara Model Home (however a pre-installed conduit is required to allow for easy PV installation later when solar cells are more cost effective).

Energy use was compared to an ordinary new house with an identical floor plan, but constructed using current standard 2" x 6" frame building practices that meet all state building and energy codes, utilizing standard fiberglass batts, a forced-air central HVAC and no regard for solar orientation.

The study found that an Oshara resident choosing the normal cost-effective energy conservation features and the required standards would use 51.8% less energy in the home than a typical homeowner. Further, it should be noted that the sustainability features in the Oshara Model will not increase the net monthly

housing costs (mortgage plus utilities) because the slightly higher mortgage payment will be offset by the energy savings; Moreover as energy costs continue to increase, the dollars saved will increase.

## Transportation Energy Use

The second study compared the driving patterns anticipated for people who choose to live and work in Oshara Village to those of average New Mexico residents. Because Oshara is a mixed-use village with retail shops, restaurants, services and live/work units, with on-site employment and easy access to public transit, Oshara residents will be able to work, play and attend churches, schools, and access healthcare, wellness, recreational and higher educational activities with far fewer vehicle trips than people living in a Conventional Subdivision Development.

The study found that Oshara residents who drove cars with average fuel-efficiency (22.4 miles per gallon) would use 61.3% less energy for driving than normal. The study also found that if, Oshara residents choose to drive a gas/electric hybrid or other fuel-efficient car they would use 80.4% less energy for driving than normal.

## Combined Energy Use

**The overall energy savings for an Oshara resident choosing sustainability (home and transportation energy use combined) range from 54.1% to 58.7% depending on their vehicle's fuel efficiency.**

*This equates to reducing the Carbon Footprint for an Oshara family that chooses sustainability by about 26,000 pounds of CO<sub>2</sub> each year.*

These overall energy savings could be further enhanced with the use a fuel-efficient hybrid as a second car, though many Oshara residents could manage well with only one car.

The assumptions for the studies along with methodology, data tables and conclusions are posted on [www.NewVillageInstitute.com](http://www.NewVillageInstitute.com) and [www.OsharaVillage.com](http://www.OsharaVillage.com).

### Summary Table of Energy Studies (in gallons of gasoline\*)

Home Energy Use	Conventional 1,708	Oshara 824	Savings 52.8%
Transportation Energy Use	Conventional	Oshara	
Average (22 mpg)	550	213	61.3%
Fuel Efficient (44 mpg)		108	80.4%
Combined Energy Use	2,258	932	58.7%
		1,037	54.1%
Carbon Footprint (pounds)	45,160	18,640	26,520

*\* In order to facilitate the analysis of total energy use, numbers in both studies are expressed as equivalent gallons of gasoline, which are easier for people to understand than BTUs or kilowatt-hours and provide a consistent measurement unit for both home and transportation energy use.*

## Summary Table of Energy Use by Category

Energy Use Category	Typical New Home <i>Million BTU/yr</i>	Oshara Home <i>Million BTU/yr</i>	Use (%)	Reduction (%)
Heating and Cooling	84.1 MMBtu/yr	50.3 MMBtu/yr	49.2%	50.8%
Domestic Hot Water	22.8 MMBtu/yr	4.5 MMBtu/yr	19.7%	80.3%
Lights and Appliances	86.8 MMBtu/yr	47.4 MMBtu/yr	54.6%	45.4%
Transportation <i>(in gallons of gasoline)</i>	550 gal	108 gal	19.6%	80.4%
<b>Oshara Energy Savings</b>				<b>58.7%</b>

