



OPTERRA
ENERGY SERVICES

Private Sector Perspectives on Urban Sustainability

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1. Our Story



Going Beyond Energy



Nuvview Union School District, Nuevo, CA

- 622 kW of solar pv, LED lighting, safety and security, energy conservation measures
- \$4.7 million in net savings over 15 years
- Savings helped fund construction of a state of the art STEM Lab



Our Quest



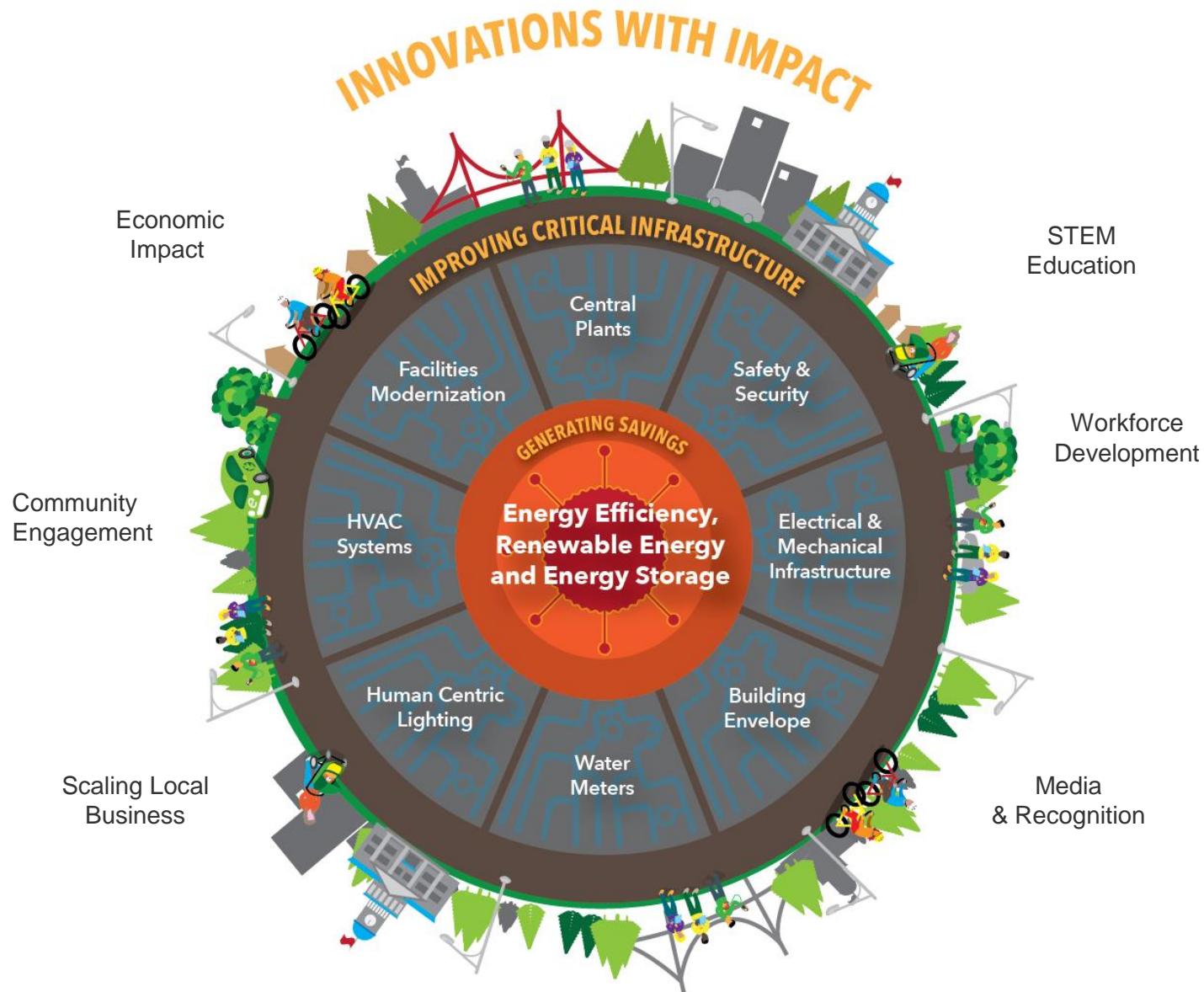
“How can we improve solutions so they go beyond energy?”

Our Vision



OpTerra is a pioneer in advancing the sustainable energy economy, creating positive impact for the communities, institutions and businesses we serve.

Our Holistic Approach



Our Reach

OpTerra is the nation's largest independent, privately held energy efficiency and renewable energy company:

- ✓ **40 years of expertise in sustainable energy solutions**
- ✓ **\$2 billion in energy savings**
- ✓ **Thousands of community members engaged**

What Sustainability Means to Us: 2014 Successes



\$40MM

Annual Energy Savings For Our Customers

**REDUCED 230K
metric tons of GHG**

= ~48k cars off the road

4,785 Students

Positively Impacted

HEALTHIER
Human Centric Environments

Our Business Highlights:

71,600

Interior LEDs retrofitted and LED
streetlights installed

\$300MM

in new energy efficiency and
renewable energy business
developed

17MW

Solar pv designed and developed

2. Technology Trends



The Transformational Power of LEDs



Global Market:

The global LED lighting market will reach **\$25.7 billion** in 2015 as the overall lighting market grows to **\$82.1 billion**

U.S. Market:

Current size of U.S. LED market = **\$4.9 billion**

The LED lighting market in North America is anticipated to grow **45% per year** through 2019 and reach **\$42 billion by 2019**

Environmental Impact

If deployed worldwide, LEDs could save 670 million tons of GHG emissions/year, or **the equivalent to reducing the entire EU's carbon emissions by half.***

Widespread adoption of LEDs in the US could prevent the emission of as much as 90 million metric tons of CO2 in the US, or **the same as removing 19MM cars off the road every year.****

*The Climate Group, 2012

**Department of Energy, 2012

LEDs provide brighter, more evenly distributed light than HPS, while reducing energy usage by 50%



Low CCT, Low CRI: High-Pressure Sodium



High CCT, High CRI: LED

LED Impact Across the U.S.



Wyoming Dept. of Transportation

- First state-wide LED streetlight retrofit
- 5,300 fixtures
- Will reduce utility and maintenance costs by 40%
- Anticipated \$16.5MM in energy savings from full program over 20 years



City of Arlington, TX

- 10,500 fixtures
- Energy efficiency at 22 buildings
- \$14MM in energy savings from full program over 15 years



City of San Jose, CA

- 18,000 fixtures retrofitted to date (62,000 fixtures total)
- First of its kind, Smart, networked system
- Tunable lighting controls support astronomical research by Lick Observatory
- Will reduce utility and maintenance costs by 40-60%
- Anticipated 7.2MM kWh saved by 2016

Tunable LEDs Enhance Human Centric Lighting (HCL)



Studies have shown that HCL can synchronize our circadian rhythms to:

Improve

- Learning
- Concentration
- Performance
- Efficiency
- Accuracy
- Social behavior
- Sleep

Reduce:

- Fatigue
- Errors
- Hyperactivity

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City of Livermore Innovation Acceleration Plan



Results: Comprehensive, no capital outlay, program stood as platform for delivering broader community impact



ECONOMIC DEVELOPMENT

- Created 35 jobs and helped scale a local lighting technology company

WORKFORCE DEVELOPMENT

- Created an internship program for hs students to implement a community energy savings strategy that converts residential savings into retail activity

ENVIRONMENTAL STEWARDSHIP

- 1.22 MW of solar, 6,000 LED streetlights and building upgrades
- Offset 4.9 MM pounds of CO₂ emissions per year

FISCAL HEALTH

- Projected savings of \$10MM over the next 20 years

Forbes

MercuryNews.com
Silicon Valley
PART OF THE BAY AREA NEWS GROUP

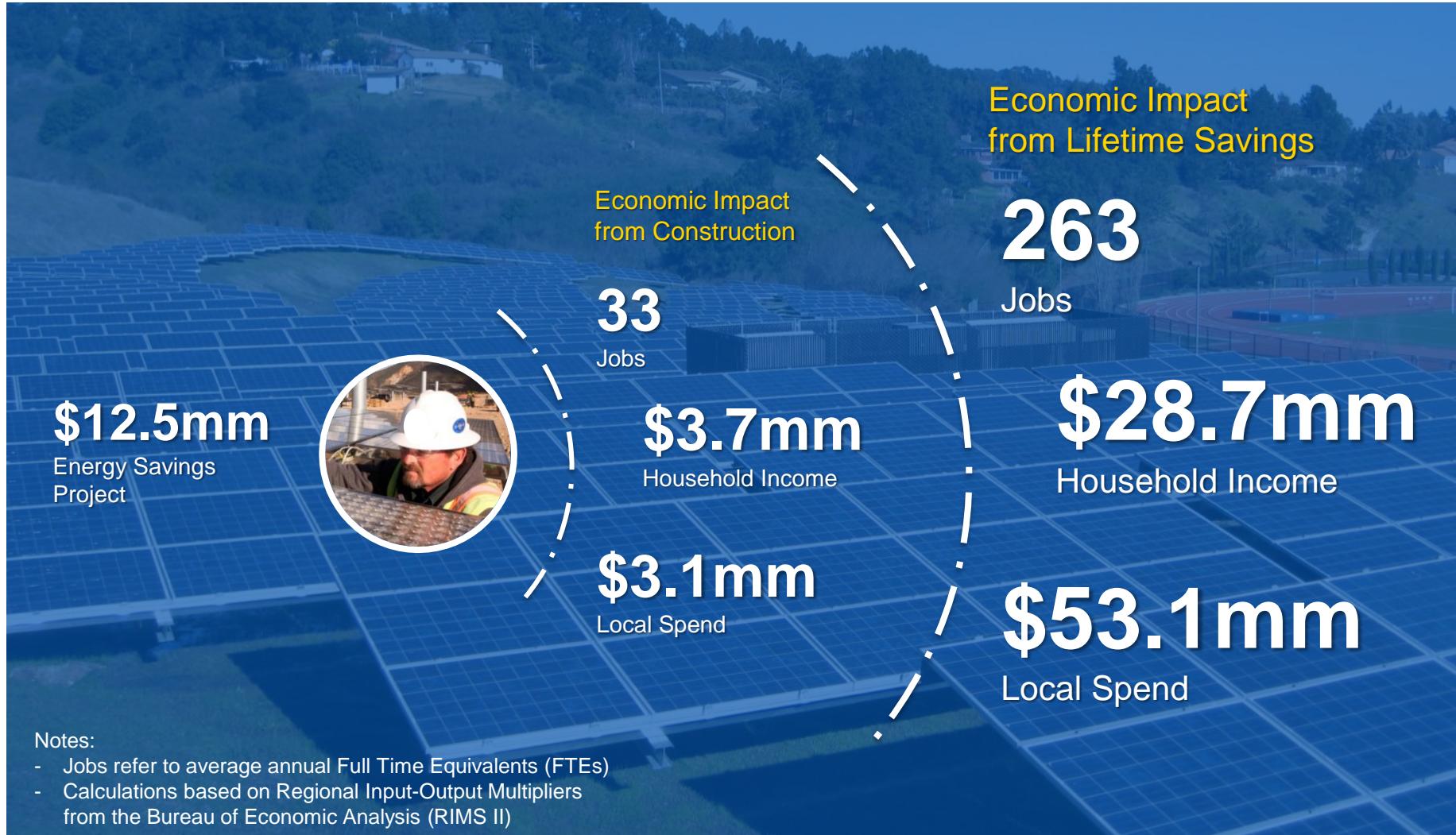
THE WALL STREET JOURNAL.

CONTRA COSTA TIMES

greentechmedia:



Benefits to the City: Economic Development Calculator (representative sample)



Benefits to the City: Workforce Development

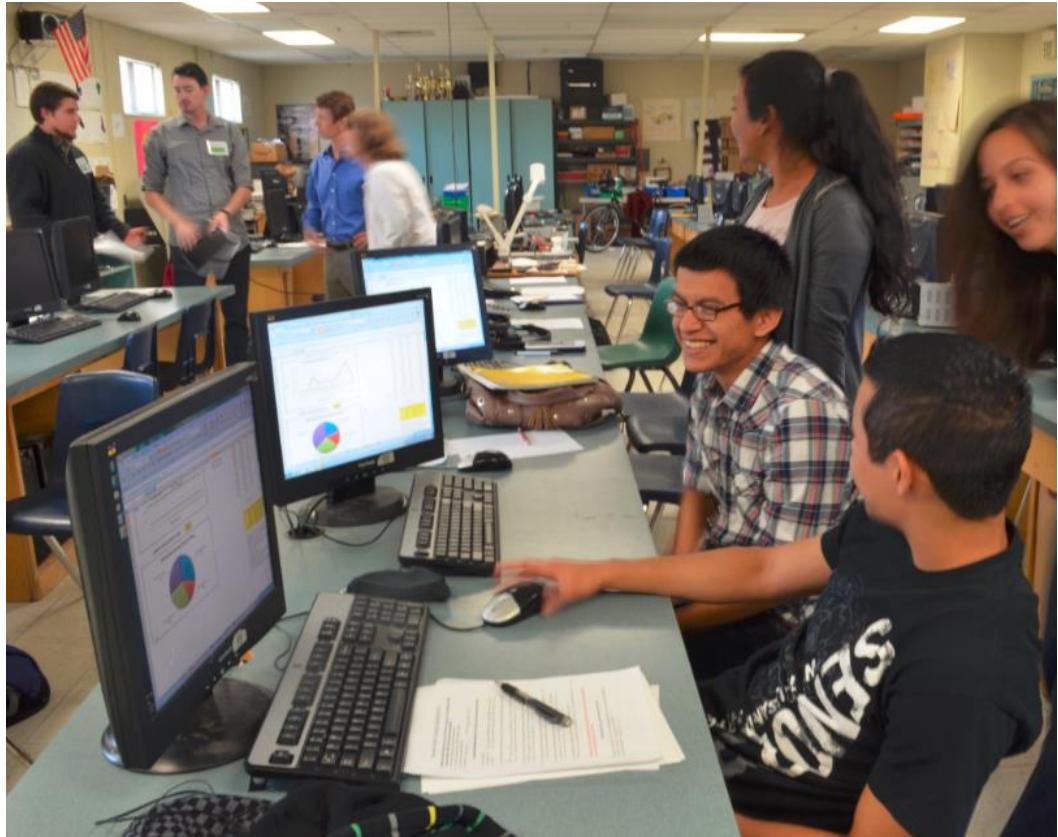


Local high school and community college students participate in the home coaching and energy conservation training modules.

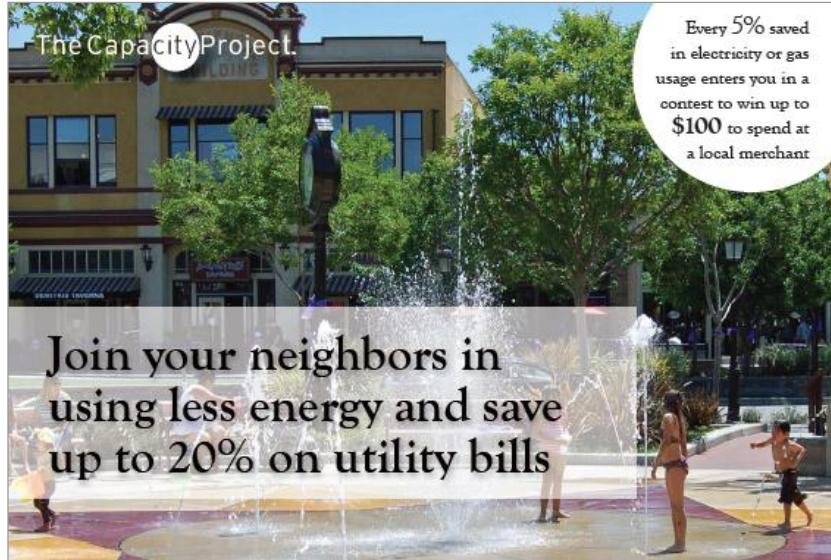
Students are provided with exposure to 'green' sector professions and real-life experience.

"The Capacity Project is a great way to open people's minds to saving energy not only publicly, but in their homes, as well." – Diego, Livermore HS Senior

"This has been the best decision that I've made in my HS career." – Aurely, Livermore HS Senior



Benefits to the City: Community Engagement



The Capacity Project is a continual touch point for OpTerra, the City and their residents.

Student Energy Consultants are trained local high school students, who become stewards of sustainability within the community.

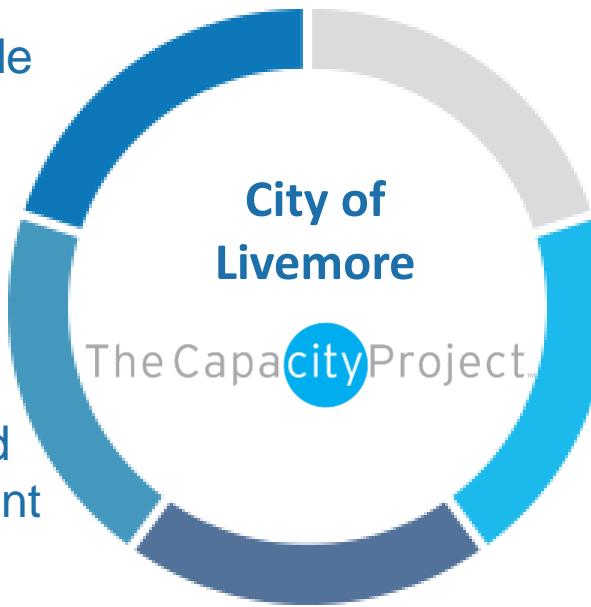
Small businesses and shop local programs flourish through the rewards programs.

Benefits to the City: Sustainable Partnerships



OpTerra Energy
Implements city-wide
energy savings.

**Program Web &
Mobile Tools**
Track energy use and
economic development
impacts. Connect
community.



Students
Interns serve as energy
ambassadors for
outreach & education in
the community.

Local Business
Works with student
interns and offers local
retail incentives for
residents who achieve
energy savings.

Residents
Save energy using the
program's web and
mobile tools. Students
help residents connect to
the program.

Working to Create the Great Indoors, Together



- Buildings are the new human habitat.
- Designing for well-being, savings and efficiency are compatible and complementary goals.
- Working across industries and between public and private sectors, we can deliver the best solutions for our communities.



Appendix:



- Nuview STEM Lab Overview

Nuvview STEM Lab Overview



In 2013, Nuvview Union School District used the development of their district-wide energy program as a platform for engaging students around science, technology, engineering, and math (STEM). Through the implementation of sustainability programs, Nuvview invested the projected energy savings into the construction of a STEM Lab.

Who:

Over 150 7th and 8th grade students at Mountain Shadows Middle School.

When:

The STEM Lab elective is offered every semester throughout the school year.

What:

The STEM Lab allows students to explore real-world topics in a hands-on way – with modules to engage learners around topics like sustainable agriculture, intelligent homes, and oceanography.

