



# Panel 1: Leading by Example in Public Buildings

Energy Efficiency & Conservation Block Grant (EECBG)  
& State Energy Program (SEP)  
Southwest Regional Peer Exchange

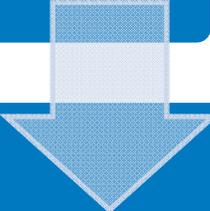
Deb Beattie  
NREL

January 19, 2011  
Los Angeles, CA

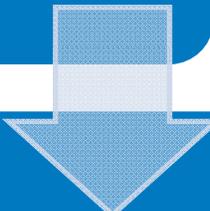
# Panel 1:

## Leading by Example in Public Buildings

Introduction



### Grantee Presentations

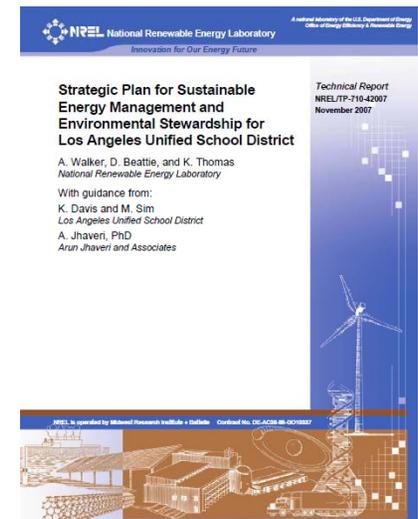
- Jim Westberg - ESPC
  - David Hodgins - QECBs
  - Shawn Thompson - Benchmarking
- 

Peer Exchange - Group Discussion

# Introductions

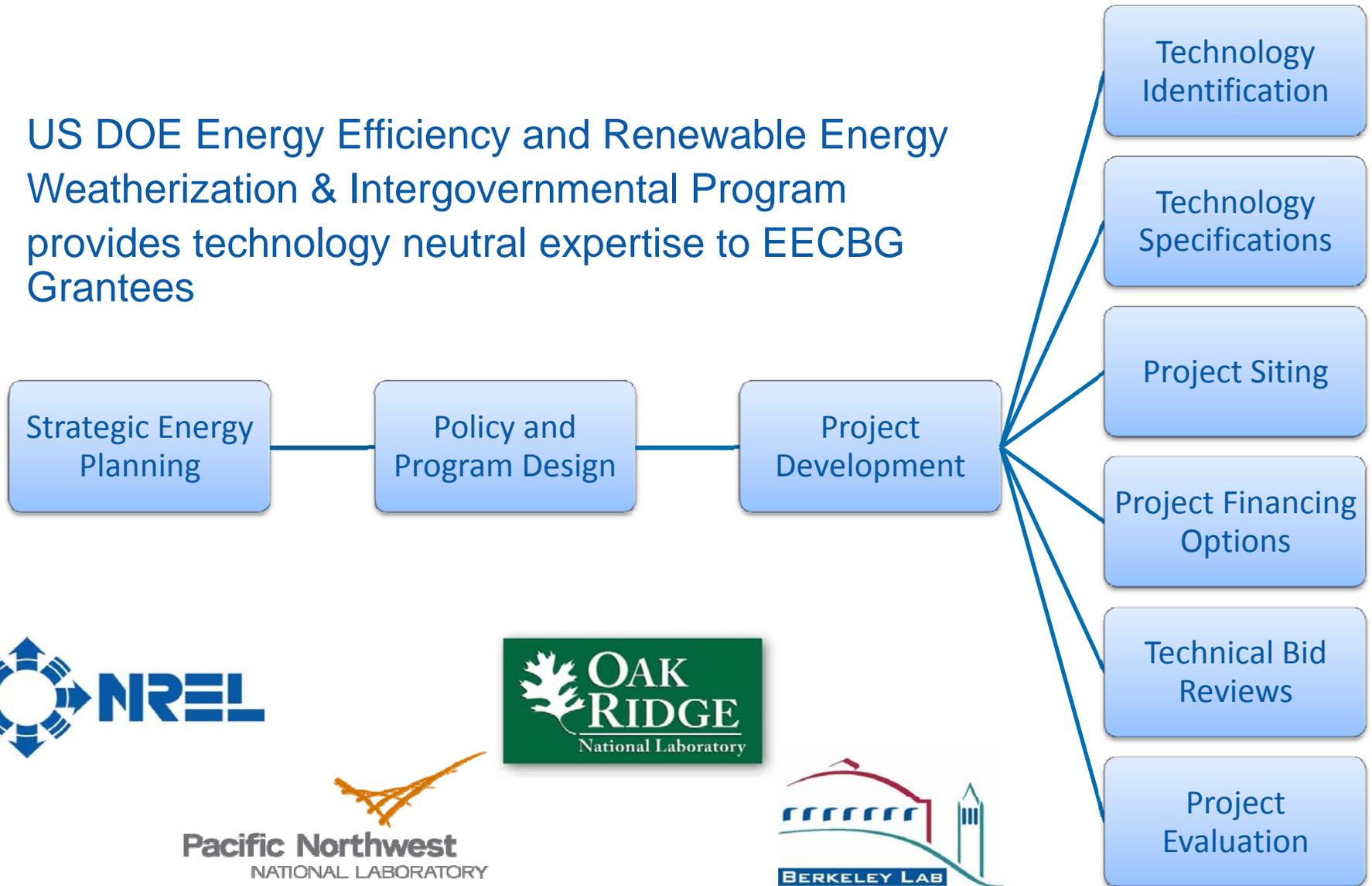
*Deb Beattie for Dustin Knutson*

- DOE FEMP provides technical support, workshops, and strategic partnering meetings to help federal agencies and utilities develop and implement Utility Energy Services Contracts (UESC) – comprehensive energy and water efficiency and renewable energy projects
- NREL's technical lead on UESC



# Technical Assistance

US DOE Energy Efficiency and Renewable Energy Weatherization & Intergovernmental Program provides technology neutral expertise to EECBG Grantees



# Technical Assistance Examples

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## ➤ Planning & Project Development

- Strategic Energy Planning
- Resource Assessment – identify opportunities
  - Energy Audits including weatherization
  - Renewable energy siting on government buildings

## ➤ Decision Support

- Financial Incentive Programs including espc, on-bill financing, and revolving loans
- Building code assessment

## ➤ Education & Outreach

- Assessment Training
- Workforce Training
- Finance Training
- Clean Energy Exhibit

# Jim Westberg – ESPC

## Energy Savings Performance Contracts

ESPC is a contracting vehicle used to assess, design, implement, and finance comprehensive energy, water, and renewable energy projects

- Jim helps state agencies, school districts, and the commercial sector reduce energy consumption through energy efficient lighting and green building design

*Jim Westberg, CEM, LEED AP*

*Energy Program Administrator*

*Arizona Department of Commerce Energy Office*

# David Hodgins – QECB

## Qualified Energy Conservation Bonds

QECBs are qualified tax credit bonds authorized by the Energy Improvement and Extension Act of 2008 for renewable and other technologies available to Local, State, and Tribal Governments

- David provides resource efficiency consultation to commercial portfolio owners and works with cities developing programs to incentivize such projects in commercial buildings
- David will also be speaking on Panel 2 about “driving demand for retrofits”

*David Hodgins, LEED AP  
Commercial Sector Project Development Manager  
Clinton Climate Initiative  
Energy Efficiency Building Retrofit Program*

# Shawn Thompson

## Benchmarking

Benchmarking is commonly known as a process for comparing one's performance against industry best practices; the results can be used to plan for improved performance

- Shawn began her professional career in land development; her work has included design & construction contract management, transportation, environmental program management, and energy
- At the City of Irvine, Shawn developed the notable “Irvine Quality Plus” an energy efficiency program which received a CEC award; co-authored the city's first energy plan in 2001, and prepared the most recent Irvine Energy Plan adopted in 2008
- Shawn's work now includes green building, energy efficiency, and renewable energy; and she administers the \$2.3 million Energy Efficiency and Conservation Block Grant

*Shawn Thompson, PE, LEED AP  
Environmental Programs Engineer  
City of Irvine, CA  
Certified Green Building Professional*

# Requesting Assistance

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## Technical Assistance Center (TAC)

<https://tac.eecleanenergy.org/>

- 1) Name and email of grantee
  - 2) Brief overview of request
  - 3) Timeline requested
  - 4) Specific expert (if any)
- You may also contact your Regional Coordinator
- Aaron Burdick, Caroline Cochran (SW Local RCs)
  - Jim Arwood (SW State RC)

<http://www1.eere.energy.gov/wip/eecbg.html>



# Peer Exchange – Group discussion

# **EECBG & SEP Southwest Regional Peer Exchange Meeting**

## **PANEL 1: Leading by Example in Public Buildings: ESPCs, QECBs, & Benchmarking**

**Jim Westberg, CEM, LEED AP  
Energy Office  
Arizona Commerce Authority  
January 19, 2011  
Los Angeles, CA**

# Arizona's State Energy Program School Energy Performance Contracting



- **\$16.6 million in ARRA Funds for School Energy Efficiency Projects.**
- **Demonstrate Energy Saving Performance Contracting on a Large Scale in Arizona.**
- **Grow the market. Strengthen the ESCO Market to Allow it to Continue after ARRA.**
- **Leverage the Funds for Significant Impact.**

# School Energy Performance Contracting Arizona's Success Story



- **ARRA buys down 30% of total project cost.**
- **\$12 Million awarded to 34 School Districts.**
- **Combined with \$28 million in leverage for total \$40 million in projects.**
- **Projects will save over \$4.4 million a year.**

# **School Energy Performance Contracting Arizona's Success Story**



- **Additional 13 Districts approved for Investment Grade Audits. (Estimate \$4.5 million ARRA will lead to another \$15 million in projects)**
- **Result: \$55 million in School Improvements.**
- **Local Companies now offering ESCO Services.**

# Example: Roosevelt Elementary School District





*Advancing Arizona's Economy*



<b>ARRA</b>	<b>\$726,983</b>
<b>District</b>	<b>\$1,585,739</b>
<b>Total</b>	<b>\$2,312,722</b>

## **Roosevelt Elementary School District**





# City of Los Angeles

Leveraging QECBs to expand the City's  
Municipal Building Retrofit Program

# City of LA Background

- Green Retrofit and Workforce Ordinance
- Applies to over 500 City-owned buildings
  - Requires significant capital investment...
- Using its QECB allocation, the City can dramatically accelerate its program
  - Use EECBG funds to support QECB issuance
  - Once projects are completed, bank the savings to service the QECBs
  - Savings must be accurately tracked and isolated



# QECB Background

- Qualified Energy Conservation Bonds
  - Taxable, subsidized by Federal Government
  - US Treasury pays lesser of:
    - Taxable Rate
    - 70% of the Qualified Tax Credit Rate
  - Maturity up to 17 years
  - Allocated to local governments based on population



# QECB Background

- Eligible uses of funds...
  - Reducing energy consumption in publicly owned buildings
  - Implementing green community programs
  - Developing rural capacity
  - Supporting energy-related research facilities, research grants and research
  - Implementing mass commuting and related facilities
  - Designing/running demonstration projects
  - Public education campaigns



# QECCB Background

- A maximum of 30% of QECCB allocations may be used for private activity purposes
- All bond proceeds must be spent within 3 years or used to redeem bonds at the end of that 3 year period
- Issuers must have a binding commitment with a 3<sup>rd</sup> party to spend at least 10% of the bond proceeds within 6 months of the issuance date
- Only 2% of the bond proceeds can be used towards cost of issuance



# Using ARRA Funds to Support QECBs

- Debt service reserve fund
  - Used to repay principal & interest in the event that the borrower is unable (or revenues are insufficient)
- Capitalized interest fund
  - Used to make bond coupon/interest payments
- Principal sinking fund
  - Used to make bond principal payments



# Los Angeles' Process

- GSD audited 130 facilities
  - Recommended efficiency measures
  - Cost and Savings estimates
- 3<sup>rd</sup> Party to Validate Savings Projections
- City to finalize list of projects based on validated savings projections
  - Issue QECCBs to fund most promising projects
- EECCBG will fund DSRF, PSF, CIF



# Web-Based Benchmarking

K. Shawn Thompson, PE, LEED AP O+M, CGBP  
City of Irvine  
EECBG Grantee Meeting  
January 19, 2011

CITY OF IRVINE



# Sustainability Information Management System (SIMS)

- Original concept was community-wide
- SIMS chosen for its
  - ability to do analysis
  - reports/graphics
  - query capabilities
  - linkage to GIS
  - PAGE reporting assistance

Utility Billing Data

Program Data  
(Rebates, Audits,  
etc.)

Additional  
Sustainability  
Metrics



## Sustainability Information Management System (SIMS)



Tax Assessor Data  
(Size, Age, Type,  
etc.)

Building Data (Initial  
Construction,  
Remodels)

Local Parameters  
(Weather, Program  
or Individual's  
Data)

# Graphs and Tables

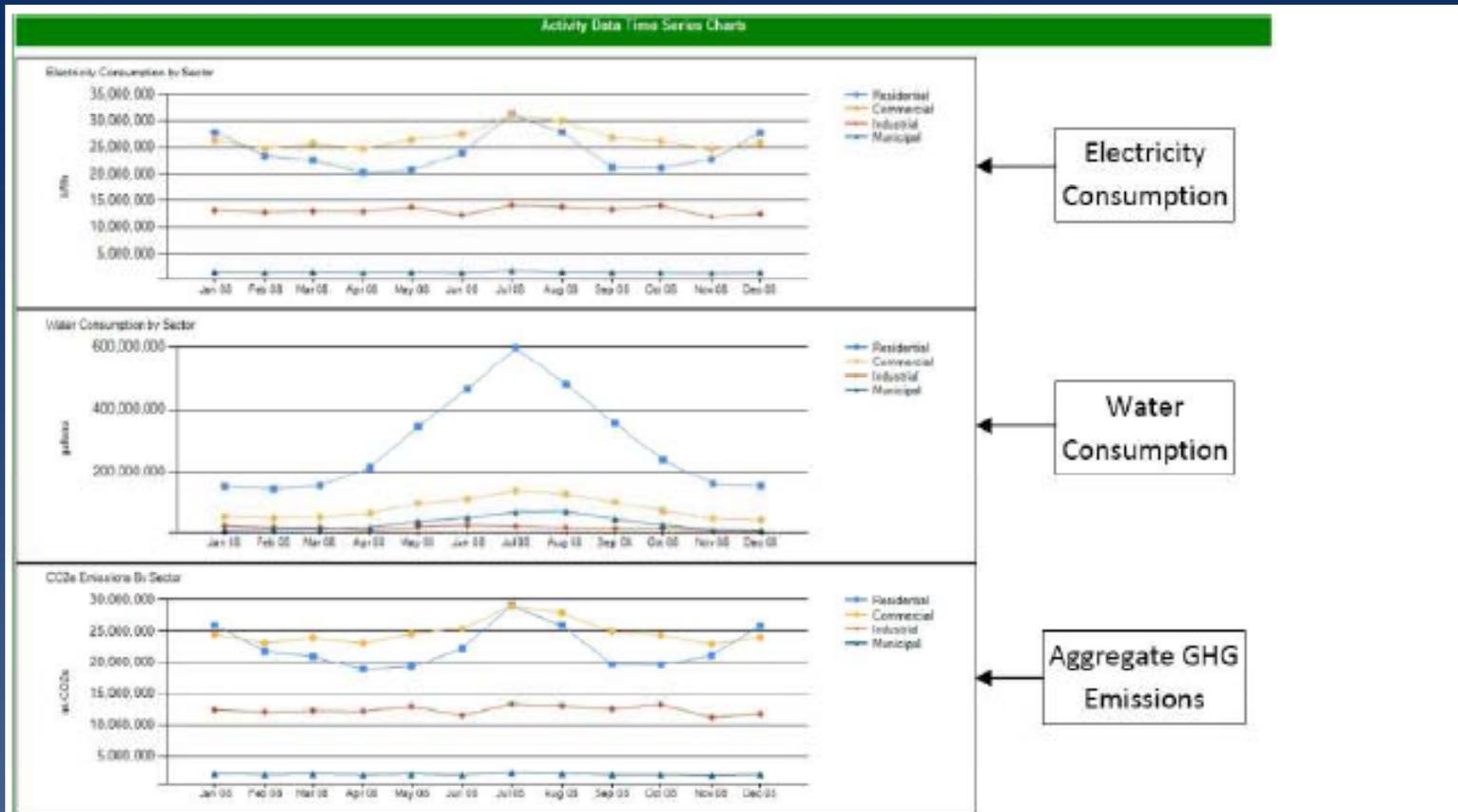


Figure 7: Raw and Weather-Normalized Trending Analyses Can Be Readily Developed

# Data for Specific Projects



Figure 2: Program Overview Module - Cumulative Savings from Enrollment

# Sample SIMS Query

The screenshot shows the 'Custom Queries' section of the SIMS application. The interface includes a navigation menu at the top with options like 'Standard Reports', 'Queries', 'P.O.O.H.', 'P.L.G.J.E.T.', 'Manage Login', and 'Logout'. Below this, there are sub-menus for 'Utility Sector Summary', 'Utility Sector Period Comparison', 'Normalization Comparison', and 'Custom Queries'. The main area is divided into several sections: 'Category' (with a tree view for Residential, Commercial, Industrial, and Municipal), 'Data Criteria' (with 'From' and 'To' date fields), 'Property Metrics' (with fields for Sq. Footage, Property Value, Monthly Consumption, and Year of Construction), 'Map' (with radio buttons for Electricity and Water), and 'Value Type' (with radio buttons for Consumption and Intensity). There are also 'Query', 'View Properties', and 'Map' buttons at the bottom. Six numbered callouts provide instructions: 1. Click the electricity radio button. 2. Click the consumption radio button. 3. Click on the single family, duplex/triplex, and manufactured sub-sectors boxes. 4. Select the appropriate date criteria: 1/1/2008 to 12/31/2008. 5. Enter appropriate property metrics. 6. Click the 'Query' button.

1 Click the electricity radio button (if not already selected).

2 Click the consumption radio button (if not already selected).

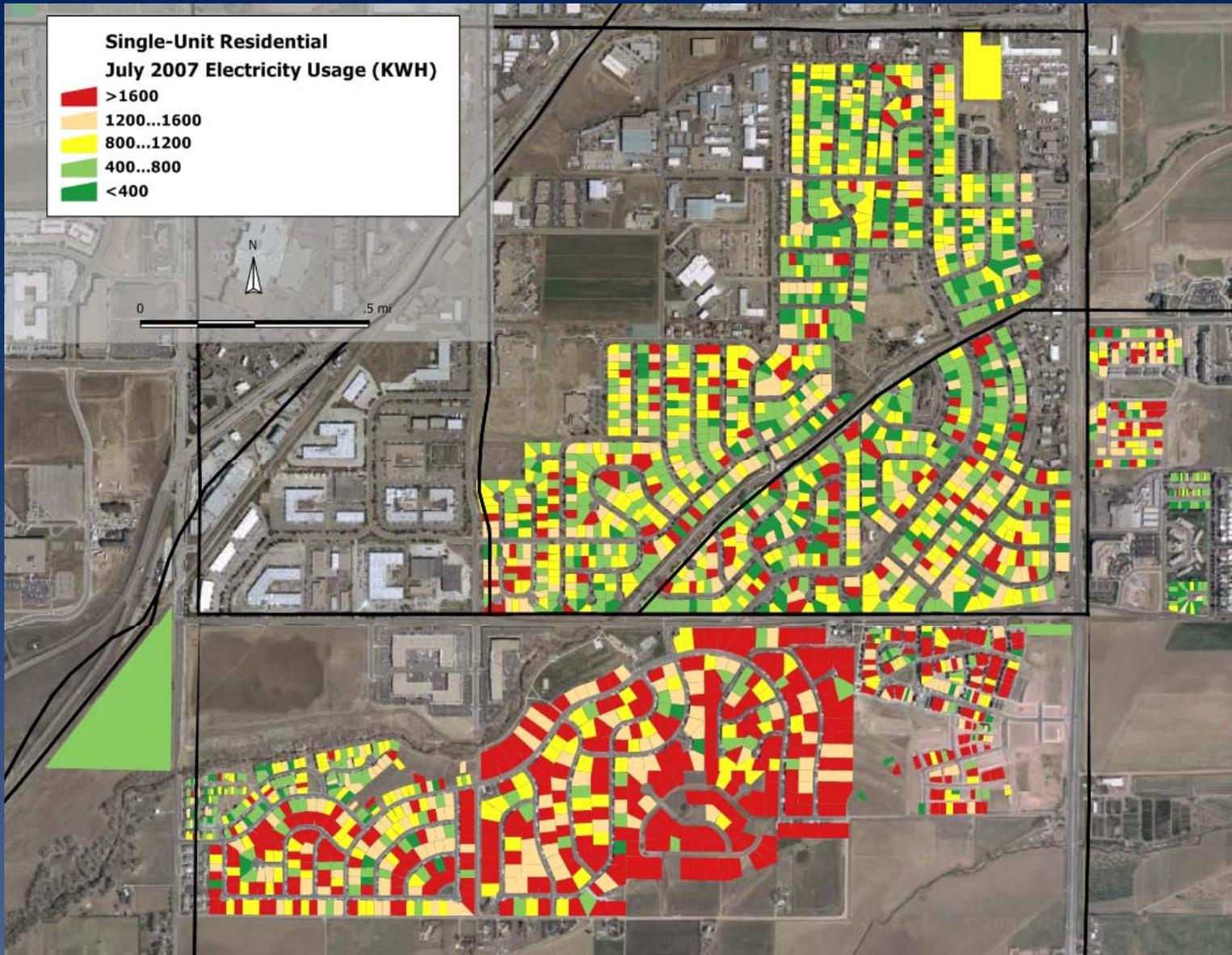
3 Click on the single family, duplex/triplex, and manufactured sub-sectors boxes. A check mark should appear if the desired sub-sector is selected.

4 Select the appropriate date criteria: 1/1/2008 to 12/31/2008.

5 Enter appropriate property metrics. For example, a minimum building square footage of 2000, minimum monthly consumption of 2500 kWh, and a maximum year of construction of 1970.

6 Click the 'Query' button.

Figure 10: Custom Queries Allow for Detailed Data Analyses by Sector and Sub-Sector



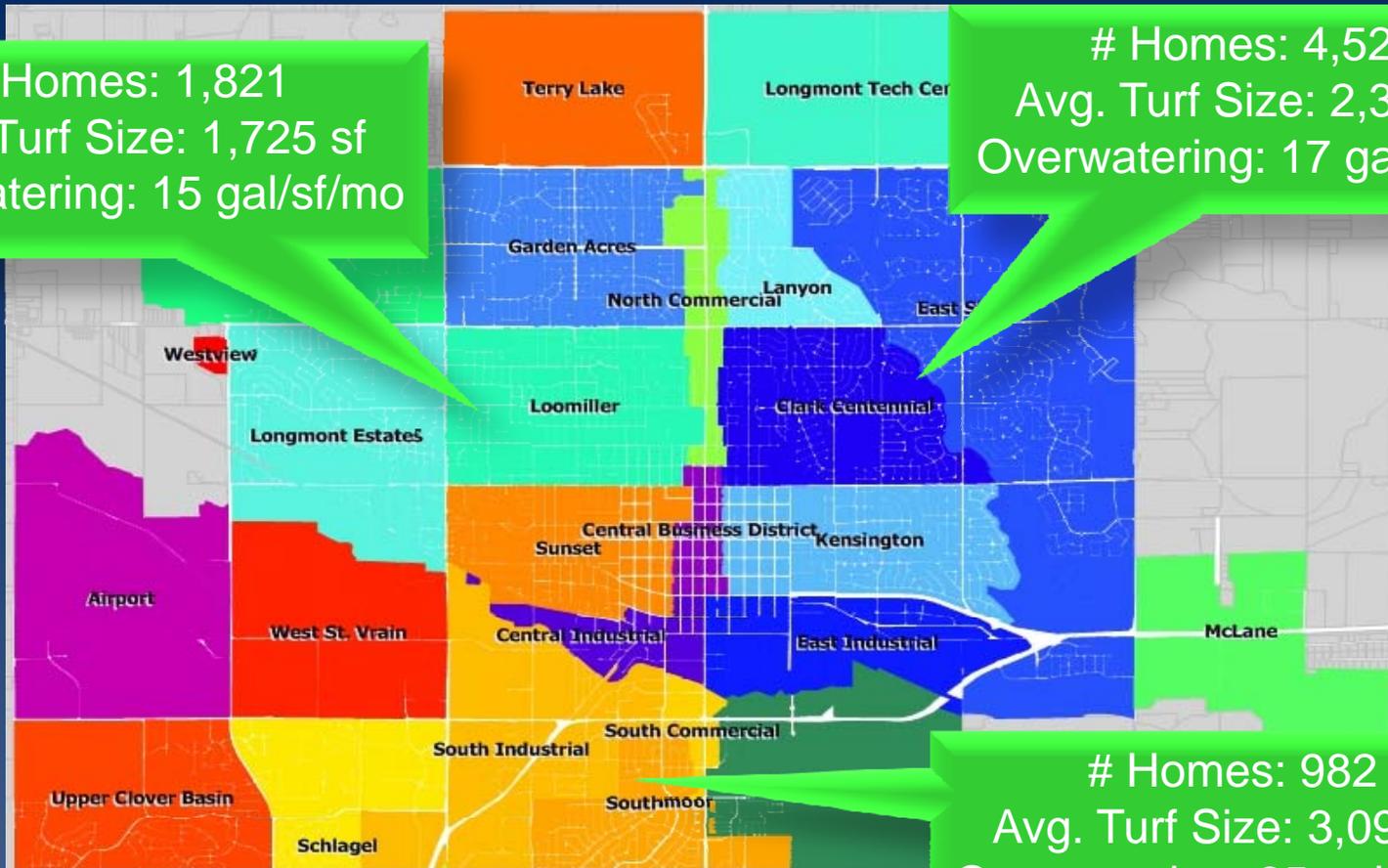
CITY OF IRVINE



# Homes: 1,821  
Avg. Turf Size: 1,725 sf  
Overwatering: 15 gal/sf/mo

# Homes: 4,526  
Avg. Turf Size: 2,325 sf  
Overwatering: 17 gal/sf/mo

# Homes: 982  
Avg. Turf Size: 3,098 sf  
Overwatering: 25 gal/sf/mo



# Funding Award Spending, Tracking, and Effectiveness Reporting (FASTER)

**SYMBIOTIC ENGINEERING**  
*Defining Green*

**FASTER**  
Welcome, IrvineFundAdmin Logout My Profile

Home **FASTER**

**Selection**

**Data Entry Mode**  
 View Totals  Edit  
 Use subrecipients

**Recipient**  
 City of Irvine  
 ZipCode: 92623

**Project Attributes**  
 Select Project Attributes

**Period**  
 Select Period

**Calculation Mode**  
 Annual  Service Life

**Selected Results** **Export** Fund Name: City of Irvine Fund Fund Dates: from Thu Jul 01 2010 to Wed Jun 01 2011

Node ID	Activity	Jul-10	Aug-10	Sep-10	Q3-2010	Oct-10	Nov-10	Dec-10	Q4-2010	CT-2010	Sum	Direct Energy Spend, MMBtu	CO2e Reduced, mt	MWh saved	Cost savings, \$	Natural gas saved, 1000cf	Cost savings, \$	Gasoline saved, gal	Cost savings, \$
1	Alternative energy																		
14	Residential																		
61	Photovoltaic																		
64	Wind																		
67	Solar Thermal																		
71	Biomass																		
70	GSHP																		
15	Commercial																		
16	Industrial																		
17	Stations																		



# Progress So Far

- Uploaded City's existing GIS data
- Input baseline information from utilities
- Working to develop data transfer protocol
- Working with City staff on analysis needs
- FASTER module to help report for PAGE

# Conclusion

- \$170,000 to set up and maintain for 1 yr
- Should be live in 2011
- Questions?

Shawn Thompson

City of Irvine

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