

An aerial architectural rendering of a large research facility. The complex includes several large glass greenhouses, a central courtyard, and various brick buildings. A parking lot with several cars is visible on the left. The surrounding area is landscaped with green lawns and trees.

# **ARS Energy Water and Sustainability Program**

## **Sandy Morgan – Facilities Energy Manager**



# About ARS

- Research Arm of USDA
- 3,200 buildings in 106 locations
- Annual utility cost \$45 million
- Labs, greenhouses, animal facilities, agricultural buildings
- 13.5 Million SF
- \$1 billion Agency
- 50,000 large animals, 400,000 acres





# Our Approach

- Management support
- Policies
- Taking stock
- Outreach
- Reporting
- Funding - Use UESCs then ESPCs
- Network - Facility Energy Managers





# Surveys

- Meters
  - Fuels, account numbers, utilities
- Water use
- Sustainable buildings
  - Based on LEED EB V2.0
- Location energy and water consumption
- Next surveys
  - Ag irrigation, land use, animals, refrigerants





# Lots of Data

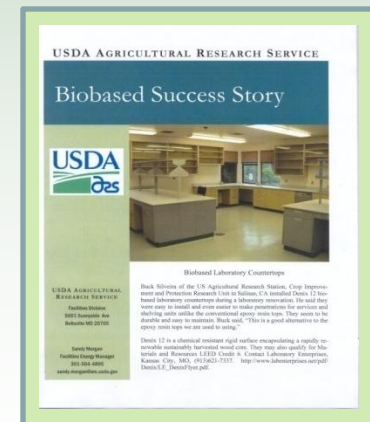
- Contact utilities
  - 30 energy audits, 10 UESCs, found a few errors
- Contact DLA Energy and GSA
- Work on locations that could be made sustainable
- Advanced meters
- Validate utility consumption





# Outreach

- Write policies, bulletins, alerts
  - Cover all the bases
- Targeted messages
- Energy Awareness SharePoint site
- PowerPoints
- Monthly conference calls
- Recognition





# UESCs and ESPCs

- Do UESCs where available and then do ESPCs
- 10 UESCs in various stages
- ESPC awarded in Gainesville FL Apr 2009
- ESPC awarded for State of Texas Dec 2009
- Goals: renewable energy, metering, recommissioning
- Do recovery act work first





# TX ESPC

- Started with an E4 Energy Audit
- 12 locations in Texas
- 89 ECMs in the IP
- 18 ECMs taken to the DES
- 6 ECMs at 2 locations awarded
- 27 other ECMs done outside the ESPC
- Annual Savings \$200,000 + \$35,000







# GHG Road Test

- Learning experience
- Top down approach
  - Had FY 2008 data by fuel from surveys
- Made up our own tool
  - GSA, CLIP, Climate Leaders, Clean Air/Cool Planet
- Didn't have scope 1 FE & scope 3 data
  - Business travel, commuting, waste, T&D, HFCs
  - In house expertise in agricultural emissions





# Sustainability

- Surveyed all facilities
- 1 LEED NC certified project – 2 buildings/6%
- Agency wide steps
  - All green cleaning products
  - Recycle all available products
  - No HCFC equipment purchases
- Facility specific steps
  - Based on survey responses





# What Makes a Sustainable Building

Incorporate the 5 Guiding Principles

15% of Existing Buildings Must Be Sustainable by 2015

Reduce Light Pollution

Cool Roof

Divert Construction and Demolition Debris from Landfills

Reduce Plug Loads

Reduce Green House Gas Emissions

Beneficial Landscaping

Meter All Utilities

Indoor Air Quality



Reduce Hazardous Chemicals



Reduce Outdoor Water Use



Good Building O&M



Reduce Indoor Water Use



Alternative Transportation

BioPreferred™



Biobased Products



Moisture Control



Reduce Heat Island Effect



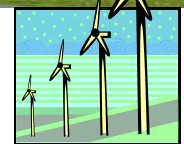
Recycling



Daylighting and Lighting Controls

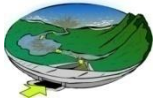


Energy Audits, Water Surveys and Re-commissioning Every 4 yrs



Use Renewable Energy

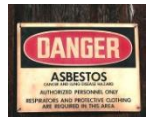
Where Storm Water Goes After the Curb Inlet



On-site Storm Water Management Restore Pre-development Hydrology



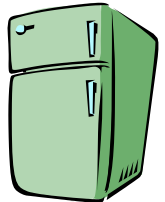
Site Selection and Building Orientation



Abate Asbestos and PCBs



Ventilation and Thermal Comfort



Reduce Ozone Depleting Substances



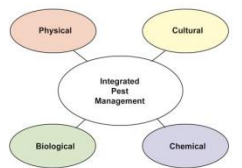
Purchase Recycled Products



Low Emitting Materials



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Integrated Pest Management



Energy Efficiency and reduced use of fossil fuels



Environmental Tobacco Smoke Control



Green Cleaning

## Community

Strengthen viability and livability of communities in which federal facilities are located

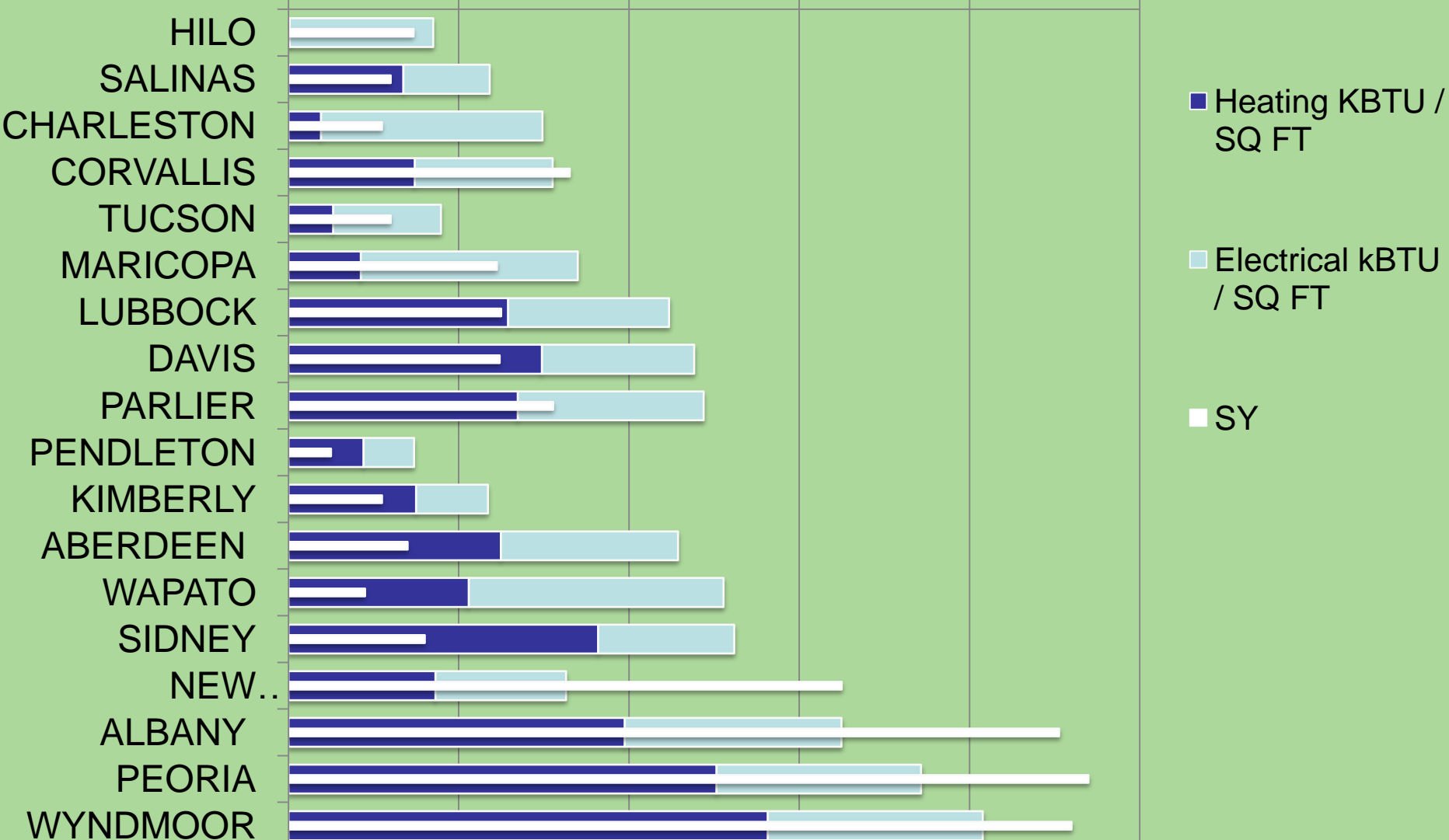


Use a Green Building Rating System



# FMS

0 20 40 60 80 100



0.0 100.0 200.0 300.0 400.0 500.0



# Other Cool Stuff

- Advanced Meters
- Renewables
  - Wind Lab in Bushland TX
  - Remote PV
  - Purchase RECS
- Ag Irrigation
  - Find opportunities for efficiency
  - Ask for exemptions for Ag Research
- Peoples Garden





# Questions?

**Thank you!**  
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