Combining Technology, Financing and Behavior to Create Resilience through Energy Efficiency

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Project Mission

- Improve Energy Efficiency (“Better Buildings”)
- Reduce GHG Emissions
- Create “Green” Jobs
- Transform Community Behavior
- Establish Mechanisms for Sustained Improvement

Goals (3 years)

- Energy Reduction
  - 18% (commercial)
  - 30% (residential)
  - 100 million kWhs
- Energy Cost Savings
  - $11 million
- GHG Reduction
  - 50,000 metric tons

Partners

- City of Phoenix
  - Project implementation

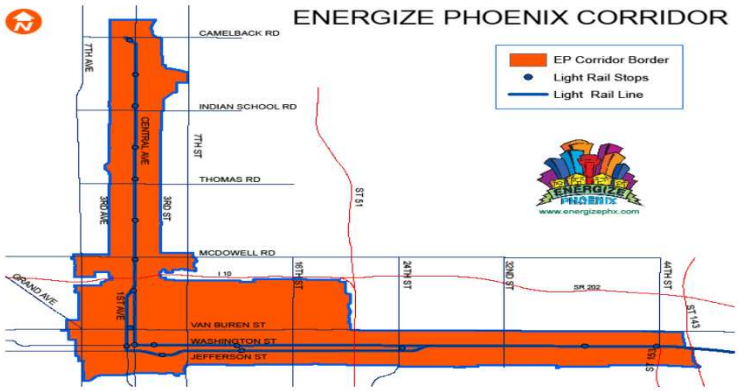
- Arizona State University
  - Analysis and assessment

- Public Utility
  - Energy use data

Arizona Public Service

- U. S. Department of Energy
  - Project funding ($25M U.S.)

Project Boundary



- Population: 37,292
- Employees: 85,357
- Residential Housing Units: 14,970
- Commercial Space: 125M Square Feet

Interventions

- Cash incentives
- Customized technical assistance for retrofits
- Real-time feedback on energy consumption
- Public education

Commercial Program

- Schools or businesses < 400 kW
  - Incentives for retrofits up to 100% of energy savings

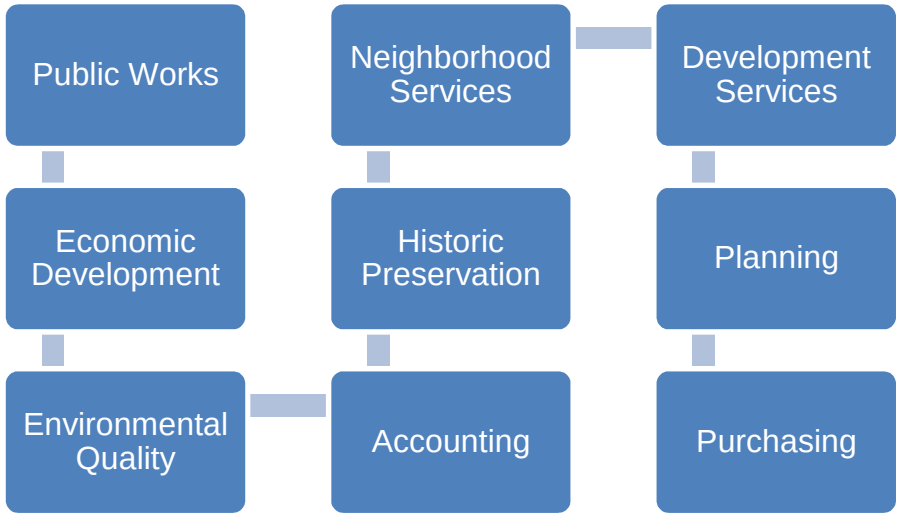
- Businesses > 400 kW
  - Incentives for retrofits matching utility rebate program

Residential Program

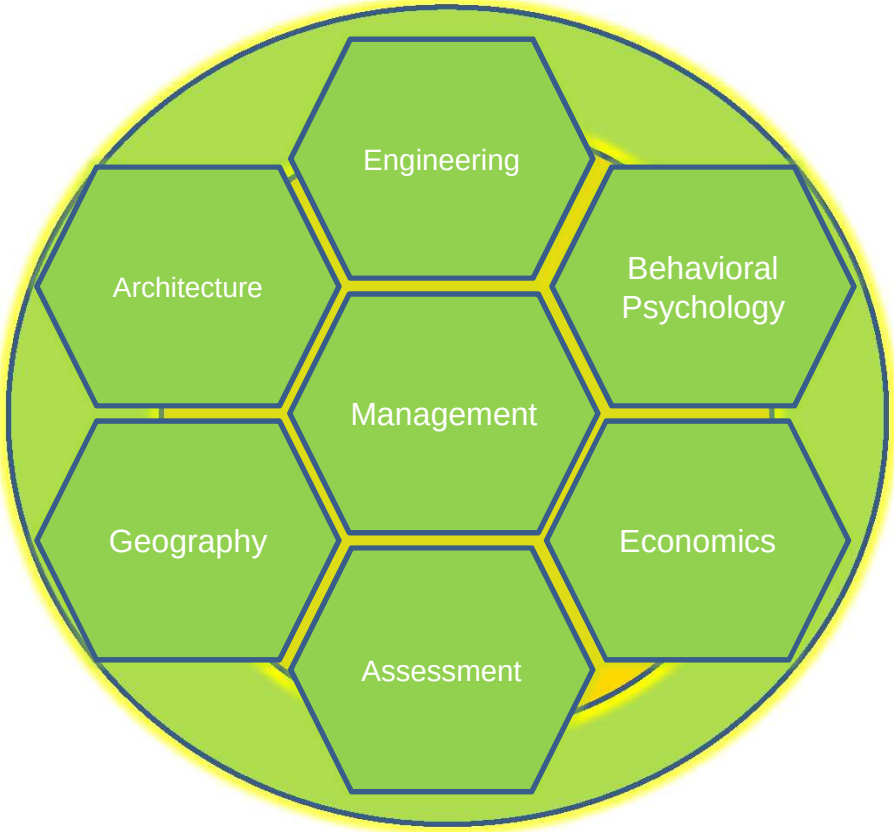
- Rebate Match
  - Single-family, owner-occupied residence
  - Match utility rebate
- 60/40 Program
  - Moderate income families (2X— 4X U.S. poverty level)
  - Program pays 60% cost of retrofits; 40% paid by owner
- Rental Properties
  - 67% of tenants must be low to moderate income

Challenge 1: City Complexity, University Multidisciplinarity

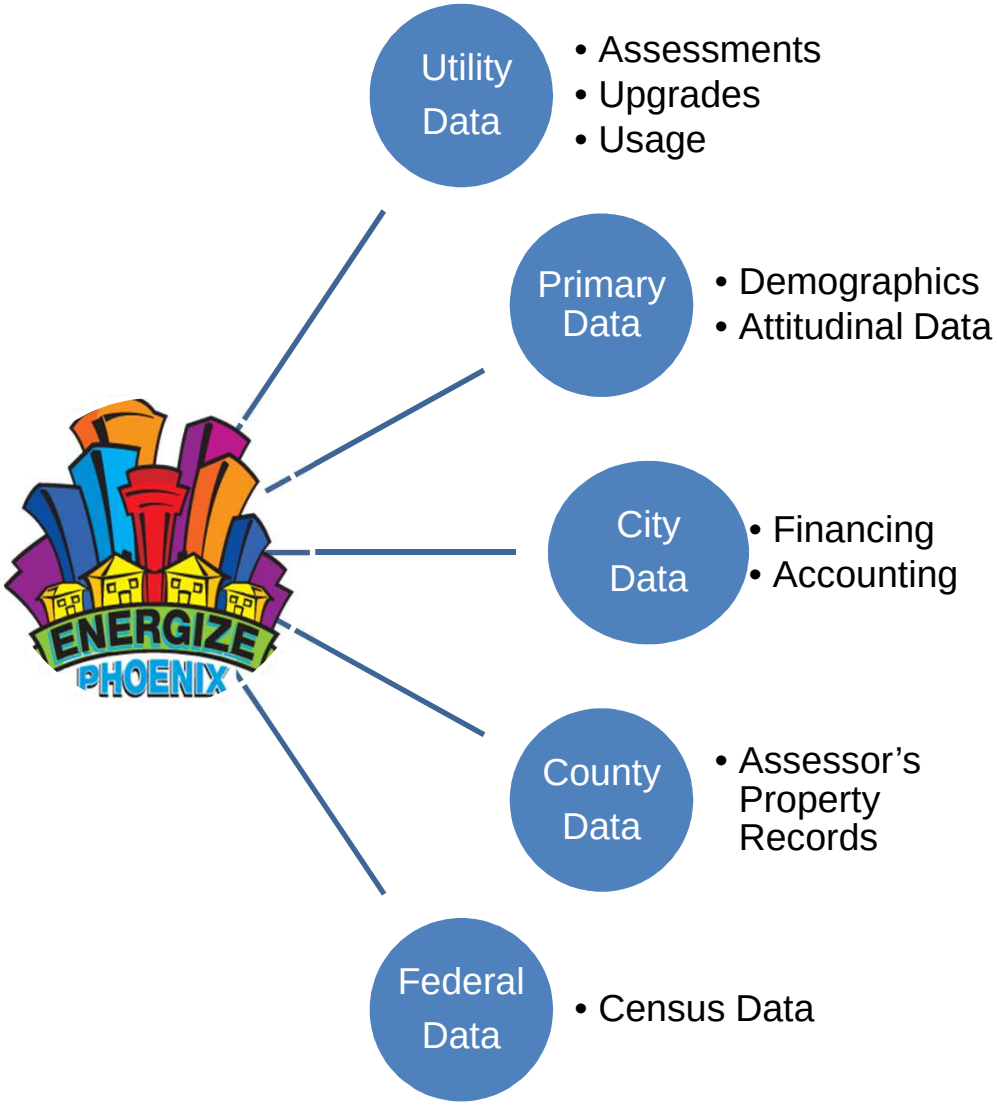
City Departments Involved



Academic Disciplines Involved



Challenge 2: Multiple Data Sets



Challenge 3: Different Primary Missions

- City: Provide services to residents
- University: Generate knowledge
- Private Utility: Create Profit
- Federal Agency: Create jobs, energy resilience

Lessons Learned

Differences in mission, pace, political sensitivities and success criteria among key institutions can be an obstacle to making cities more resilient.

Programs to achieve energy savings, reduce GHG emissions and improve resilience can best succeed when individual institutional interests are subordinate to shared, city-wide benefits.