

# **Arizona State University & Carbon Neutrality**

## **What – Why - How**

**Bonny Bentzin**

*Director, University Sustainability Practices  
Global Institute of Sustainability  
Arizona State University*

# Agenda

- **Why a Carbon Neutrality goal**
- **The Process for Developing the Plan**
- **Setting Priorities – Tracking**
- **The Returns**
- **Discussion**

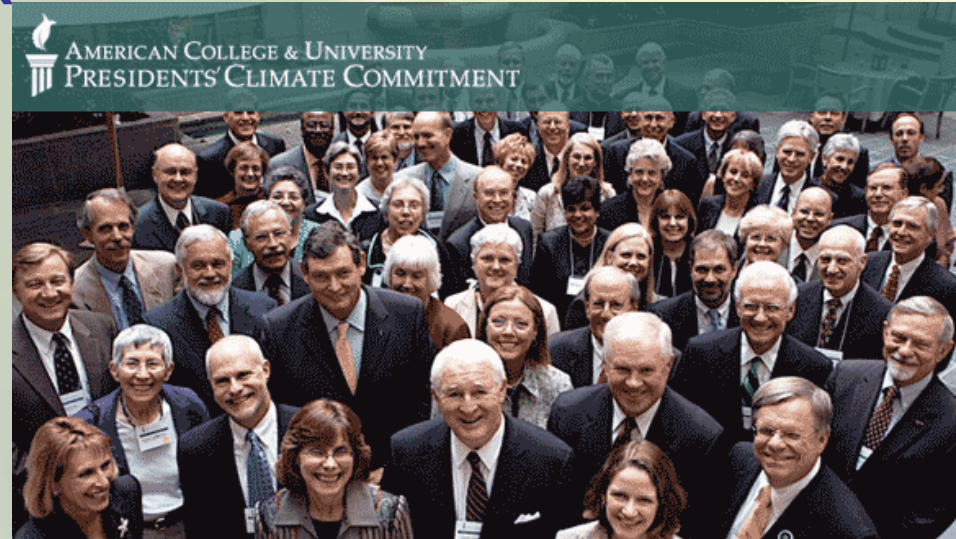
# Sustainability Practices Goals

- Carbon Neutrality – draft Carbon Neutrality Strategic Plan completed
  - 2025 for energy, solid waste and refrigerants
  - 2035 for transportation
- Zero Solid/Water Waste
  - 2015 Zero Solid Waste (proposed)
- Active Engagement
- Principled Practice



# Why Carbon Neutrality?

- Has Impact
- Strong – Visible Commitment
- Strength in Numbers - The American College and University Presidents Climate Commitment
- Return to the University
- Mitigates Potential Risk
- The Right Thing to Do



# The Plan – ACUPCC Requirements

Carbon Neutrality -Having no net GHG emissions, by minimizing GHG emissions as much as possible and to mitigate the remaining emissions. Includes all Scope 1 and 2 emissions, as well as Scope 3 emissions from air travel paid for by or through the institution and daily commuting.

- Publicly report inventory and plan
- Commit to tangible actions
- Create institutional structures for management
- Includes components for carbon emissions related to operations,
- And to make climate neutrality and sustainability a part of the curriculum and/or educational experience for all students,
- And to expand research and community outreach and/or other efforts toward the achievement of climate neutrality.

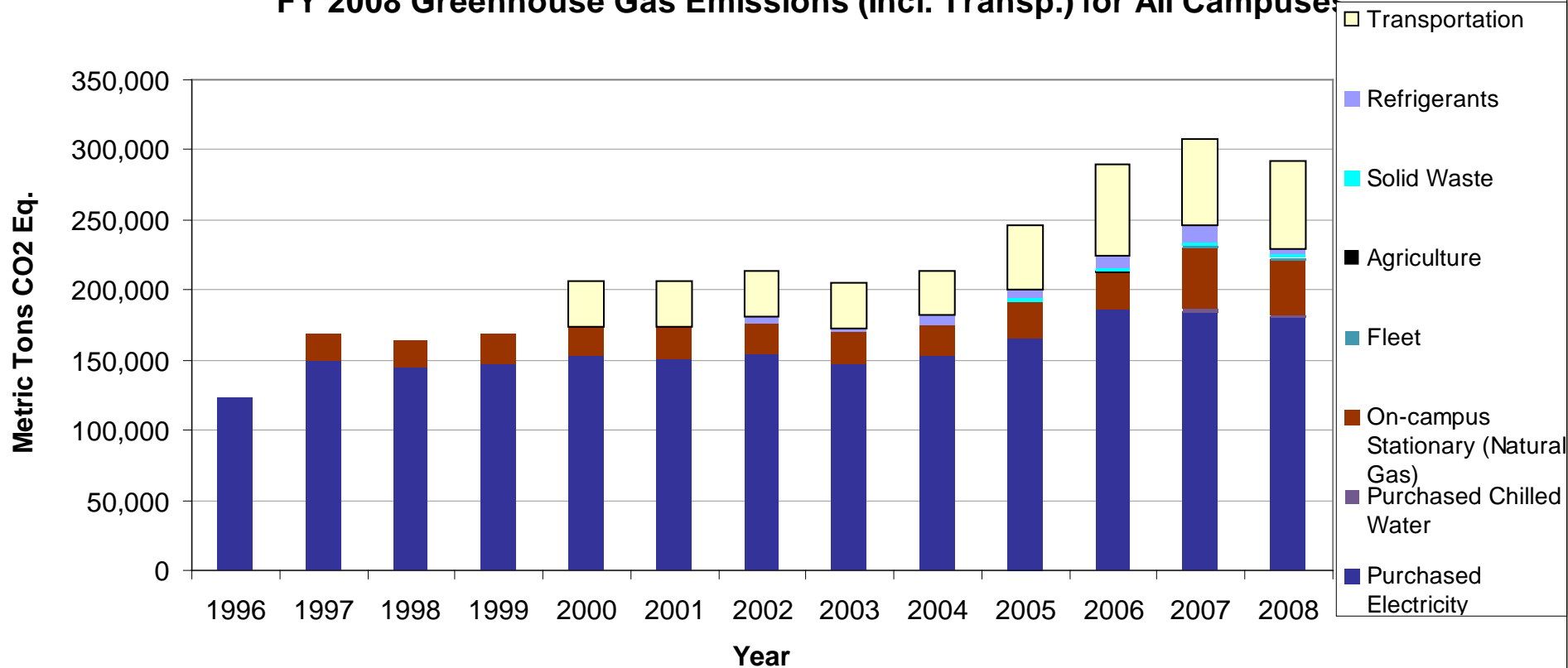


# Development Process

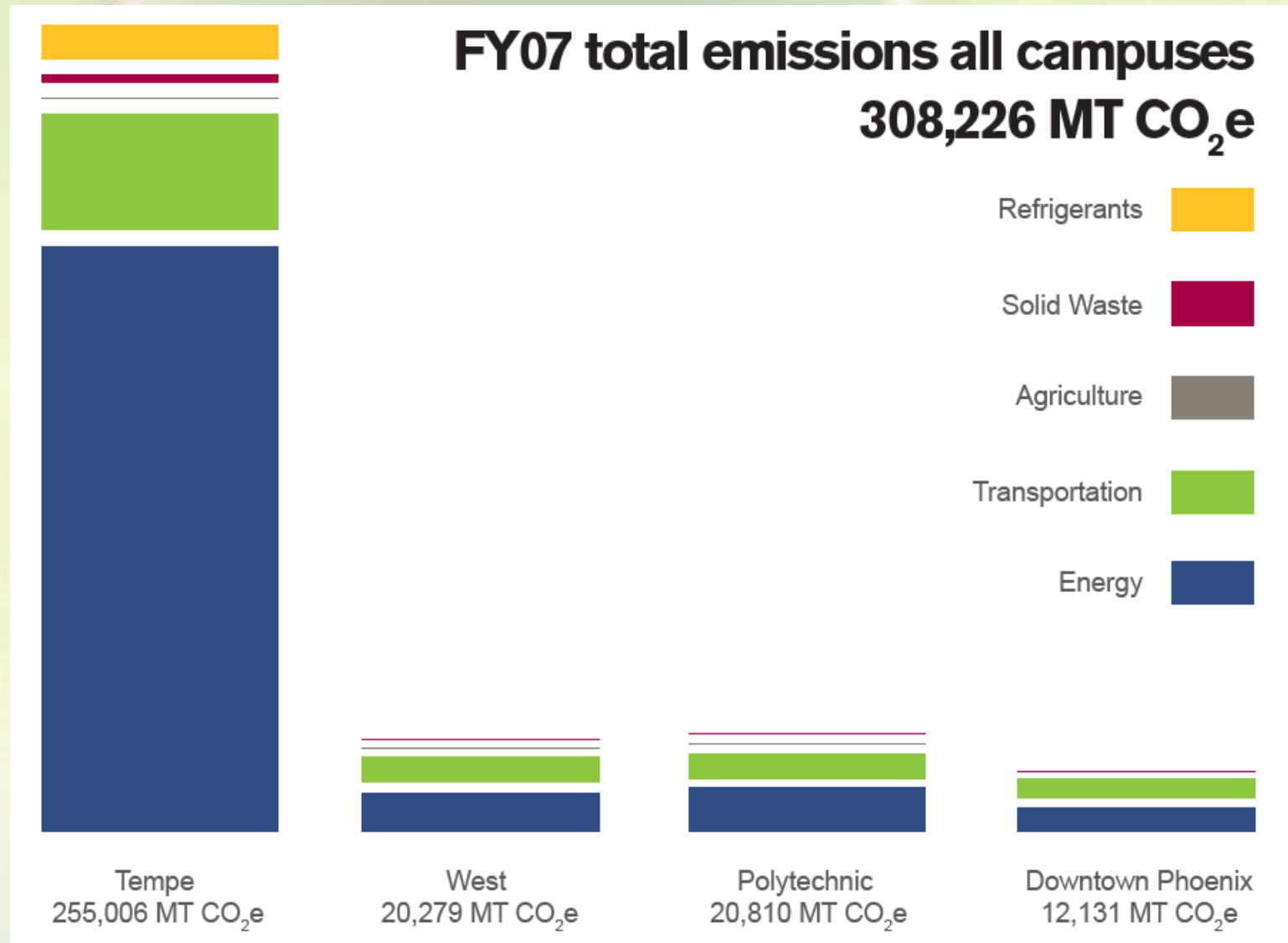
- Complete an inventory – embrace/understand the “flaws”
- Understand your organization – its values, strengths and limitations
- Start with ideas
- Convene Stakeholders
- Identify short – mid – long-term opportunities
- Consider human beings in setting targets
- Draft the document – equal parts reality, vision and promotion (smoke and mirrors)
- Review
- Publish – Implement – Revise – Update - Recognize

# Carbon Inventory

**FY 2008 Greenhouse Gas Emissions (Incl. Transp.) for All Campuses**



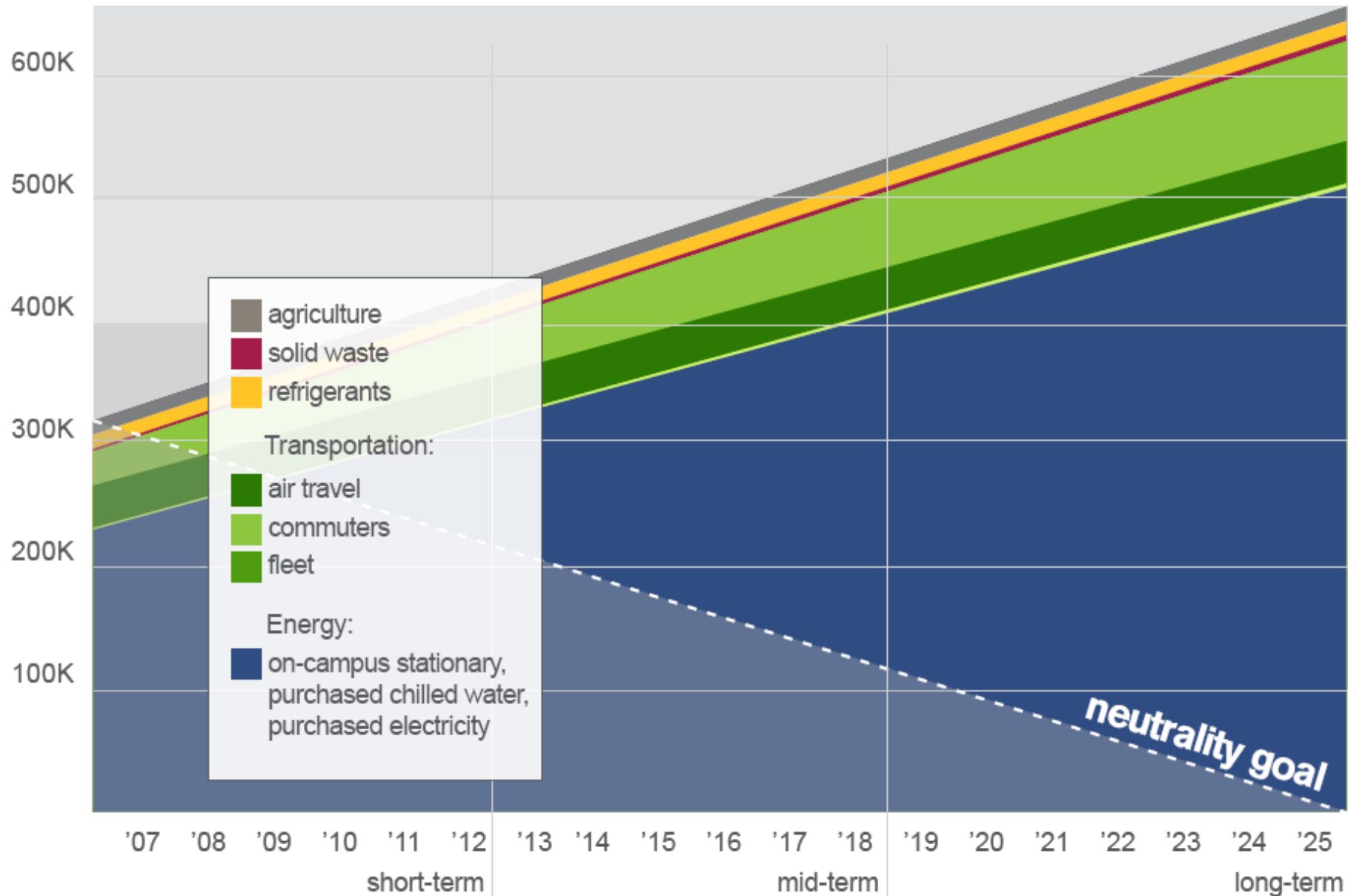
# '07 Inventory – The Pretty One



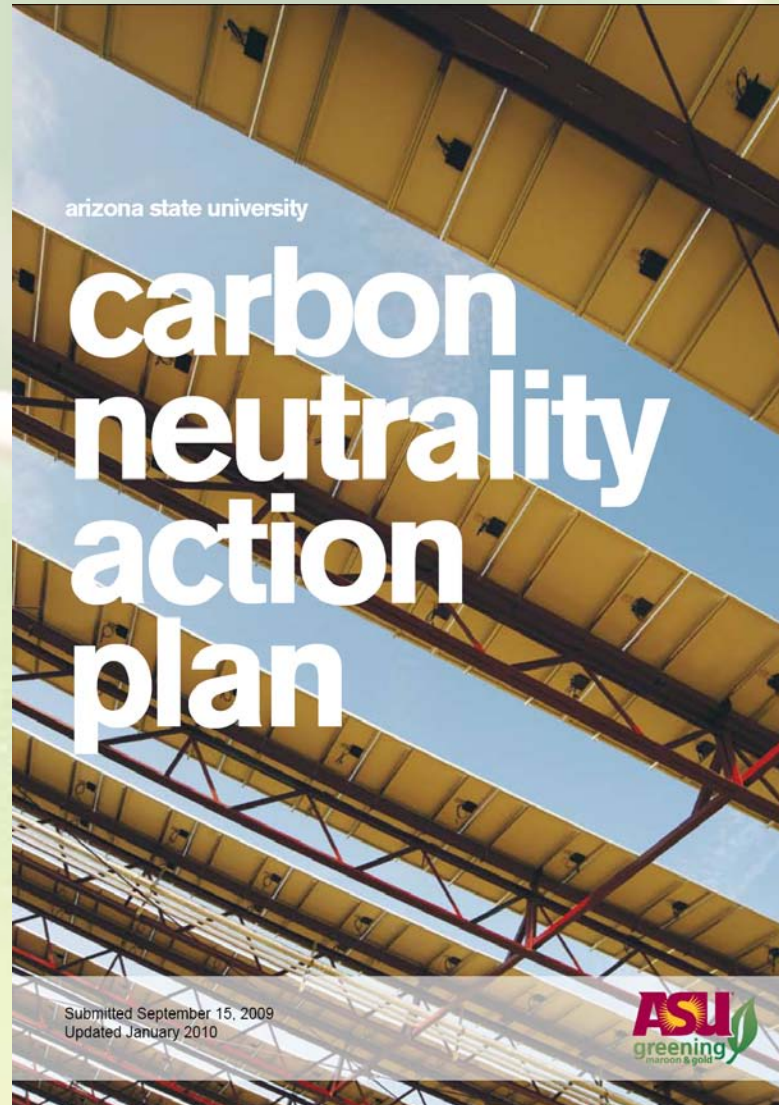


# Projections

## GHG emissions “business as usual” category projections 2007-2025



# The Plan



# Carbon Plan Operations Overview – Energy

## Energy (Primary Source)



### **Purchased (all four campuses)**

Current Sources: Coal Fired Plants, Hydro, Nuclear

*Solution Strategy:*

- Transition to On-site Renewable Energy Generation (Qualified Management Agreement or otherwise)
- Purchase Green energy generated by APS or SRP



### **Site Generated (Tempe Campus)**

Co-Gen (Converts Natural Gas to 2 forms of energy)

Central Plant

*Solution Strategy:*

- Decommission Current Plants
- Identify alternative fuel source
- or-
- Capture and sequester emissions



### **Buildings/Infrastructure (all four campuses)**

*Solution Strategy:*

- Energy Efficiency upgrades on all buildings, consideration in all purchases, performance criteria for all new builds and renovations
- Energy Conservation Education, Awareness, Engagement of the campus community
- Evaluate each campus as a system

# Carbon Plan Operations Overview – Transportation

## Transportation (Secondary Source)



### University Business/Athletics/Activities Travel

Includes air and ground transportation

*Solution Strategy:*

- Carbon Offsets
- Engaging Alternative Fuel Shuttle Buses
- Renting Hybrid vehicles and encouraging the use of public transportation where possible



### Commuting

*Solution Strategy:*

- Make alternative transportation the norm
- Offset Carbon produced by vehicles
- Use alternative fuels in shuttles



### Fleet

Includes Heavy Vehicles and Golf carts

*Solution Strategy:*

- Use only alternative fuel vehicles
- Carbon offsets
- Solar charging stations for electric vehicles

# Carbon Plan Operations Overview – Waste/Other

## Waste



### **Solid Waste Production**

#### *Solution Strategy:*

- Reusing and Recycling Waste
- Front end reduction through purchasing practices and providing services

## Other



### **Refrigerants/Lab Chemicals/Fertilizers**

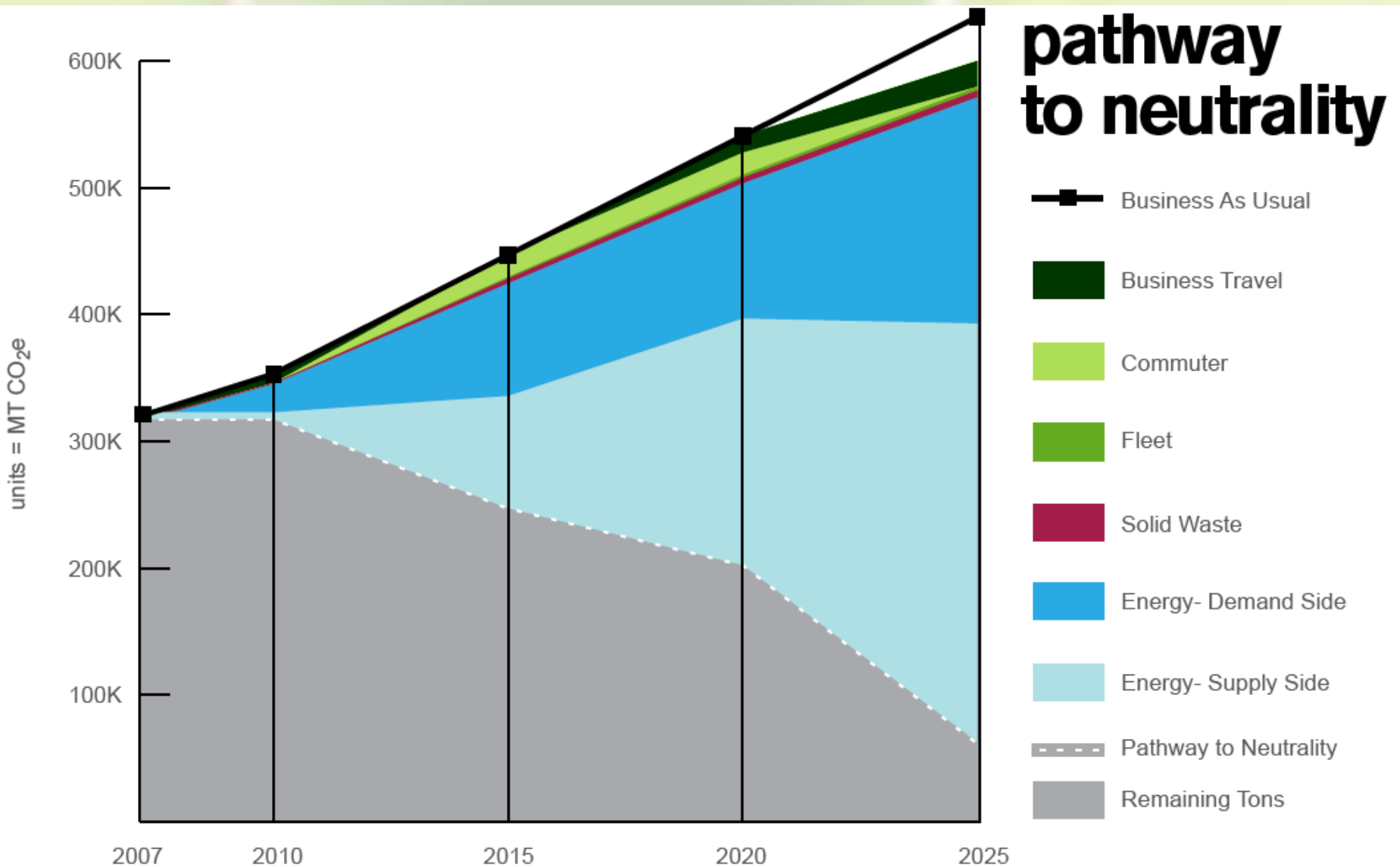
#### *Solution Strategy:*

- Replace w/alternatives (when possible)
- Evaluate, repair, and replace equipment
- Capture emissions or offset carbon

# Operations Goals

- Carbon Neutral by 2025 for all areas other than Transportation
- Carbon Neutral by 2035 for Transportation
- By 2025, ASU will mitigate 100% of carbon emissions related to energy, 35% of which will come from reductions through demand-side energy savings, and the remaining 65% through supply-side sources and verifiable carbon offsets.
- By 2025, ASU will reduce carbon emissions from waste-related emissions by 100% through aversion and diversion practices.
- By 2025, ASU will reduce all emissions related to agriculture and refrigerants emissions by 100% through best management practices of campus operations.
- By 2035, ASU will mitigate carbon emissions from transportation by 100% for commuter, university fleet, air/business travel, and shuttle vendor partnerships.





# Tiered Strategy

## Demand-Side Energy

**D1:** ASU will stress conservation and behavior change initiatives to reduce consumption by 10 percent across all four campuses. A combination of the following proposed actions will be used to achieve this objective.

POLICY/PROCEDURE/PURCHASING	EDUCATION/AWARENESS	PLANNING & BUILDING DESIGN
ONGOING	ONGOING	NEAR-TERM (2007-2012)
Where applicable, allow employees to telecommute and/or adopt alternative work schedules.	Apply integrated conservation programs using education and awareness to include office and classroom equipment power down and lights out.	Consolidate summer/holiday building use (classroom, conference space, and residence halls) into fewer buildings. Implement energy surcharge for off-hour usage.
NEAR-TERM (2007-2012)	NEAR-TERM (2007-2012)	LONG-TERM (2019-2025)
Change building funding policies and processes at state level to adopt life-cycle costing and more stringent design standards.	Connect class and research projects to support energy conservation projects on campus.	Expand ASU Online education/courses. Focus on allowing more students to attend with fewer facilities.
Consolidate office equipment technology.	NEAR TO MID-TERM	ALL
MID-TERM (2013-2018)	Expand Campus Metabolism to all buildings on all campuses to provide real-time and historical energy and other resource use data.	ONGOING
Require building users to share energy costs and savings.		Continuously evaluate the latest opportunities, technologies, and applications, and how they might connect into a systemic approach to energy conservation.

# Key Challenges

- Data – Benchmarking and tracking across the university
- Communication, Awareness and Education
- Buy-in (Ownership) across the university
- Competing values and objectives
- Third-party relationships

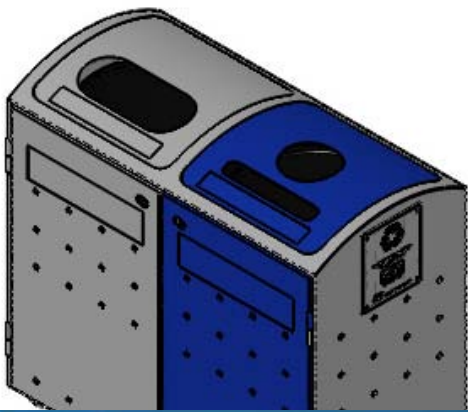
- Data Warehouse under development
- Partnering with private entity
- Still figuring this out





# Accomplishments

## • Small Steps – Bold Moves – Broad Approach



the Sustainable Toolbox  
Strategies and Resources for Sp Green Offices and Events



ing Structure 2 – Before



ing Structure 5 – Before

UNIVERSITY

### Core Expectations for Staff

Rating 5 (high) - 1 (low)

See "Evaluation Rating Chart" prior to rating

5 4 3 2 1

Service-oriented, Positive Attitude, Helpful

Trustworthy, Adheres to Ethics and Compliance Standards

Collaborative, Team-oriented

Productive, Commitment to ASU

Flexible, Adaptable

Respectful Communicator

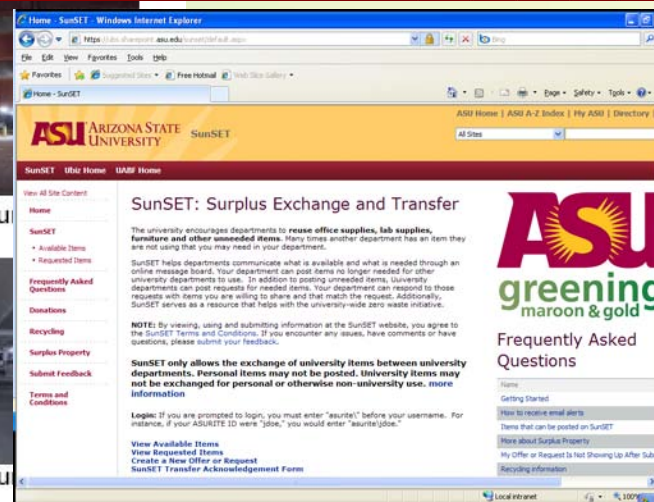
Resourceful, Committed to Sustainability



Parking Structure



Parking Structure



# The Return

- Organizational Change - The Plan Serves as a Catalyst
- Recognition – Leadership
- Mitigate Risk
- Save money (long-term)
- New Opportunity







# Questions?