

arizona state university

strategic plan for sustainability practices and operations



letter from the president



On behalf of Arizona State University, I am pleased to share with you our strategic plan for sustainability operations and practices. For more than 30 years, the Center for Environmental Studies at ASU advanced environmental research that later served as the foundation for the establishment of the ASU Global Institute for Sustainability and the nation's first School of Sustainability. Looking to the future, this document outlines ASU's specific plans and objectives as it works to create meaningful progress in terms of sustainability operations and practices.

ASU is moving quickly to achieve four overarching sustainability goals: 1) Carbon Neutrality, 2) Zero Solid/Water Waste, 3) Active Engagement, and 4) Principled Practice. It is our full intention to realize and incorporate these objectives throughout the institution. As you may imagine, this is a tremendous challenge, particularly for an institution our size; however, we are confident that by leveraging our strengths and working together, we can attain these aspirations while providing a high quality university experience. ASU is proud of the significant progress it has made to date and the leadership it has assumed in this area. Nevertheless, much work remains to be done, and we recognize our responsibility to maintain this positive momentum.

As a 21st-century university ASU takes its responsibility to educate society's future political, business and community leaders very seriously. We also embrace our role in conducting use-inspired research to solving the world's most pressing challenges and in addressing the needs of the communities we serve. Higher education shares this accountability, and ASU is working diligently and rapidly to serve as a catalyst in sustainability education, research and operational practices. By initiating change from within, we are empowered to better guide the adaptation of our organizations to the sustainability related needs and tests faced by society.

Our success to date and our future accomplishments rely heavily on the ingenuity, participation and enthusiasm of our university community. I want to thank the Sustainability Practices Network and all those who have contributed to this plan for supporting ASU's commitment to sustainability. By working together we can continue to make meaningful progress, and I encourage every reader to visit <http://sustainabilityplan.asu.edu> to explore additional options for personal action and direct engagement.

A handwritten signature in black ink that reads "Michael Crow". The signature is written in a cursive, flowing style.

Michael M. Crow
President, Arizona State University
Co-chair, ACUPCC Steering Committee



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executive summary

At Arizona State University, our primary role as a leader in sustainable practices is to positively affect the world through our academic, research and engagement activities. Our plan is to take a multi-pronged approach to our sustainability goals with the basic tenants of reducing consumption, maximizing efficiency, and rethinking products and actions. The actions we take reflect a strategy of small steps and bold moves that always will be practical and relevant.

At ASU, we reside in a desert landscape where we aim to utilize our campuses as laboratories to investigate and implement unique sustainable practices that are exercised far beyond our academic borders. Engaging our immediate communities and nation-wide collaborators allows us to educate them about our progress and find new and meaningful strategies together.

It is critical during this time of economic constraints that any investments we make to achieve our sustainability goals result in long-term operational savings. As we move forward with our plans, we are mindful to review our advancement and recalibrate our path accordingly. We also need to remember that savings and “return” can and should be calculated in many ways. We must balance direct and indirect payback efforts with practices that are the “right thing to do.” Our long-term goals will play a part in defining the university’s overall success and impact on the world.

- **Goal 1 – Carbon Neutrality** – Achieve carbon neutrality for Scope 1, 2 and non-transportation Scope 3 emissions by 2025; carbon neutral for Scope 3 transportation emissions by 2035.
- **Goal 2 – Zero Waste** – To facilitate implementation, sub-goals for solid waste from the landfill and water waste are addressed separately.
 - Goal 2a – Zero Solid Waste** – Eliminate 90 percent of the solid waste generated on campus from the landfill by 2015.
 - Goal 2b – Zero Water Waste** – Reduce water consumption by 50 percent and eliminate 100 percent of campus water effluent by 2020.
- **Goal 3 – Active Engagement** – Achieve 60 percent documented engagement by members of the campus community by 2015.
- **Goal 4 – Principled Practice** – Integrate sustainability practice principles in 80 percent of campus operations and functions.

This plan was compiled through the contribution and work of many and is considered a living document to be reviewed and questioned frequently. It adjusts according to the times and our opportunities. Short updates will be completed every other year and a more complete update is planned for opposite years. This plan is underscored by our institution’s values and bears in mind that above all:

“ASU is a New American University, promoting excellence in its research and among its students, faculty and staff, increasing access to its educational resources and working with communities to positively impact social and economic development.”

– President Michael M. Crow

impetus for action

Sustainability rests within three pillars – economic development, social responsibility, and ecological protection and enhancement. Although much is being done within all facets of the university, this action plan focuses on the university's ecological goals as they relate to its operational practices and serves as ASU's blueprint for implementation of its university-wide sustainability practices. With appropriate consultations, we expect to produce an action plan that encompasses all areas of the university and its functions, which in time will comprise a more holistic sustainability action plan.

As an organization, Arizona State University is already a leader in sustainability education, research and in its efforts to implement sustainable operations. Our location, a young state within an arid environment and known for urban development and associated resource consumption, make it both an exciting and challenging home for an ambitious sustainability program – a program that aims to not only change the largest university in the country, but also to increasingly catalyze change in its surrounding cities, region and beyond.

Shortly after entering the 21st-century, ASU transitioned to new leadership and developed a vision for a New American University. Michael M. Crow became ASU's 16th president in 2002 and shortly after developed a blueprint for a new institutional model. In his 2002 inaugural address, President Crow said,

“We are at a critical juncture in the evolution of our relationship to the environment; universities must take the lead in addressing issues of sustainability.”

While colleges and universities across the United States are only responsible for about three percent of the total greenhouse gases emitted by the United States, we have the opportunity to influence 100 percent of the students who are to emerge as this nation's future business, political and social leaders. Sustainability is a significant component of the transformation of ASU into the New American University.

ASU has taken a leadership role in advancing sustainability both regionally and nationally. The reasons for assuming an aggressive leadership position were best summarized by President Crow when he said, “within a generation, sustainability will be a word with the same transformational potential as liberty, equality and justice.”

Universities have a significant responsibility to shape future development, the opportunity to develop solutions to global challenges and to matriculate students with an understanding of sustainability principles. Through that process, we can develop a society that is more environmentally sensitive, economically disciplined and socially just.

On a national level, the university's impact and influence is communicated through its participation in the American College and University Presidents' Climate Commitment (ACUPCC). In 2006, President Crow joined with 11 visionary college and university executives to establish the ACUPCC, and went on to serve as founding Chairman of the ACUPCC Steering Committee.

(See www.presidentsclimatecommitment.org for details.)

vision

TO BE THE WORLDWIDE LEADER IN SUSTAINABLE HIGHER EDUCATION OPERATIONS.

As an organization, we are among the acknowledged world leaders in sustainability education, research and operational practices for higher education. It is our vision that the operations and practices on all of the Arizona State University campuses will be the standard for sustainability practices in higher education.

mission

TO CREATE AN ENVIRONMENT OF SUSTAINABLE OPERATIONS AND PRACTICES THAT ALIGNS WITH AND SUPPORTS ARIZONA STATE UNIVERSITY'S EDUCATION, RESEARCH AND STUDENT LIFE PROGRAMS, SEEKING TO MINIMIZE THE INSTITUTION'S NEGATIVE IMPACT ON THE PLANET, WHILE MAXIMIZING THE POSITIVE IMPACT ON THE WORLD AND ITS INHABITANTS, AND SETTING STRONG EXAMPLES FOR OTHERS TO FOLLOW.

The actions we take today and every day ultimately impact life on this planet. Arizona State University is taking action to discover new pathways for a thriving economic system, a healthy ecosphere and a more just society. Our intention is to conduct our day-to-day operations in ways that help maximize the university's positive impacts and provide optimal living, working and learning environments, while minimizing the institution's negative impact on the planet.

ASU's students, staff, faculty and administration are committed to moving toward a more sustainable world in which the economy, the environment and social institutions prosper simultaneously and symbiotically.



major goals

ASU's strategic plan reflects overarching goals as a function of short-, mid- and long-term objectives spanning through 2035. Short-term objectives we believe to be achievable within five years. Mid-term objectives, accomplished within ten years beyond the short-term continuum, will allow us to utilize the knowledge gained and apply emerging technologies for completion of long-term goals. Goals that reflect an imprecise amount of time and resources that may be currently unavailable or in infancy stages of development are considered to be long-term goals. It is our belief that each goal aligns with ASU's strategic vision of becoming the acknowledged worldwide leader in sustainable higher education operations.

goal 1 carbon neutrality

Achieve carbon neutrality for Scope 1, 2 and non-transportation Scope 3 emissions by 2025; carbon neutral for Scope 3 transportation emissions by 2035.

goal 2 zero waste

To facilitate implementation, sub-goals for solid and water waste are addressed separately.

goal 2a zero solid waste

Eliminate 90 percent of campus solid waste from the landfill by 2015.

goal 2b zero water waste

Reduce water consumption by 50 percent and eliminate 100 percent of campus water effluent by 2020.

goal 3 active engagement

Achieve 60 percent documented engagement by members of the campus community by 2015.

goal 4 principled practice

Integrate sustainability practice principles in 80 percent of campus operations and functions.

Detailed information about each of these goals and their associated objectives are presented below.

general approach

The following approach will be used for each strategic goal:

- Determine the critical components that contribute to whatever we are trying to reduce or eliminate (e.g., carbon emissions, solid waste, waste water).
- Establish metrics baseline before implementing any change.
- Prioritize the components from largest impact to smallest impact.
- Create projects to address each component and execute them.
- Measure and report changes annually based on the project outcomes.



goal 1

carbon neutrality

ACHIEVE CARBON NEUTRALITY FOR SCOPE 1, 2 AND NON-TRANSPORTATION SCOPE 3 EMISSIONS BY 2025; CARBON NEUTRAL FOR SCOPE 3 TRANSPORTATION EMISSIONS BY 2035.

definition

“From a climate perspective, research has affirmed that the reduction of greenhouse gas emissions is essential to ensuring a sustainable world. However, any meaningful progress in realizing this reduction will require timely action from a broad demographic of stakeholders.”

– President Crow, Carbon Neutrality Action Plan

Carbon Neutrality (working definition): Carbon neutrality is defined as a system where no carbon dioxide is emitted, or one that balances relatively minor emissions with legitimate carbon offsets to bring the total output to zero (according to the ACUPCC).

Carbon Neutrality – Strategies, Objectives and Metrics

Strategies	Objectives	Target Year	Metrics
1 Energy Consumption and Efficiency	Reduce university energy consumption by 10 percent per square foot below 2007 levels.	2012	Percent reduction in university energy consumption per square foot as compared to 2007.
	Reduce university energy consumption by 20 percent per square foot below 2007 levels.	2018	
	Reduce university energy consumption by 35 percent per square foot below 2007 levels.	2025	
2 On-Site Renewable Energy	Generate 10 percent of university energy requirements from on-site renewable energy facilities.	2012	Percent of university energy requirements satisfied from on-site renewable energy facilities.
	Generate 20 percent of university energy requirements from on-site renewable energy facilities.	2018	
	Generate 35 percent of university energy requirements from on-site renewable energy facilities.	2025	
3 Off-Site Renewable Energy	Purchase 10 percent of university energy requirements from off-site renewable energy facilities.	2012	Percent of campus energy requirements satisfied by purchases from off-site renewable energy facilities.
	Purchase 35 percent of university energy requirements from off-site renewable energy facilities.	2018	
	Purchase 65 percent of university energy requirements from off-site renewable energy facilities (additional on-site generation possible pending new technology).	2025	
4 Transportation	Replace all university owned vehicles with alternative fuel vehicles.	2018	Percent of university owned vehicles that use an alternative fuel.
	Mitigate 100 percent of Scope 2 transportation emissions related to university fleet.	2020	Percent reduction in Scope 2 transportation emissions as compared to 2010.
	Mitigate 100 percent of Scope 3 transportation emissions – commuter, air/business travel and shuttle vendor partnerships.	2035	Percent reduction in Scope 3 transportation emissions as compared to 2010.
5 Campus Operations	Eliminate 100 percent agriculture related emissions.	2025	Percent reduction in agriculture related emissions as compared to 2010.
	Eliminate 100 percent refrigerant related emissions.	2025	Percent reduction in refrigerant related emissions as compared to 2010.
	Eliminate 90 percent solid waste related emissions through aversion and diversion practices.	2035	Percent reduction in solid waste related emissions as compared to 2010.
6 Carbon Offsets (last resort)	Purchase verifiable carbon offsets (if needed) from an appropriate brokerage for remaining Scope 1, 2 and non-transportation Scope 3 emissions.	2025	Percent of Scope 1, 2 and non-transportation Scope 3 emissions covered by purchase of verifiable carbon offsets.
	Purchase verifiable carbon offsets (if needed) from an appropriate brokerage for remaining Scope 3 transportation emissions.	2035	Percent of Scope 3 transportation emissions covered by purchase of verifiable carbon offsets.



goal 2a

zero solid waste

ELIMINATE 90 PERCENT OF CAMPUS SOLID WASTE FROM THE LANDFILL BY 2015.

definition

To facilitate implementation, solid waste and water waste are addressed separately as sub-goals of the zero waste goal.

Zero Solid Waste (working definition): *Ninety percent* or more of the solid waste generated on campus is either diverted from the landfill through recycling, repurposing, reusing and composting practices or is averted by a reduction of consumption. Ten percent of waste may be disposed of as “trash,” provided there is no other more cost-effective disposal option. As practical options become available that allowable ten percent will be reduced. This definition does not encompass sewage waste at this time.*

*The 90 percent goal is based on the ASU's waste tonnages in the fiscal year 2007-2008.

Zero Solid Waste – Strategies, Objectives and Metrics			
Strategies	Objectives	Target Year	Metrics
1 Aversion	Reduce university's solid waste footprint by 30 percent through aversion.	2015	Combined metric – percent reduction in total university generated waste as compared to 2010.
2 Diversion	Reduce university's solid waste footprint by 60 percent through diversion.	2015	Combined metric – percent reduction in total university generated waste as compared to 2010.

goal 2b

zero water waste

REDUCE WATER CONSUMPTION BY 50 PERCENT AND ELIMINATE 100 PERCENT OF CAMPUS WATER EFFLUENT BY 2020.

definition

To facilitate implementation, solid waste and water waste are addressed separately as sub-goals of the zero waste goal.

Zero Water Waste (working definition): Use the minimum amount of water in the most efficient way possible to satisfy a given need. Alternatively, zero water waste is achieved when all campus effluent is captured, treated and reused through a combination of more efficient fixtures, better management and distribution for use by mechanical and irrigation systems.

Zero Water Waste – Strategies, Objectives and Metrics			
Strategies	Objectives	Target Year	Metrics
1 Water Conservation and Efficiency	Reduce landscaping water consumption by 10 percent.	2013	Combined metric – percent reduction in total university water consumption as compared to 2010.
	Reduce building water consumption by 10 percent.	2014	
	Reduce landscaping water consumption by 30 percent.	2020	
	Reduce building water consumption by 30 percent.	2020	
2 Water Capture and Reuse	Develop long-term plan for water capture and reuse.	2012	Whether or not long-term plan for water capture and reuse is developed.
	Reduce building water consumption by 30 percent.	2012	Whether or not rain water and gray water capture demonstration project is completed.



goal 3

active engagement

ACHIEVE 60 PERCENT DOCUMENTED ENGAGEMENT BY MEMBERS OF THE CAMPUS COMMUNITY BY 2015.

definition

An essential component of our mission is to conduct activities in ways that set an example for our students, our partners and peers, while energizing and exciting people about sustainable operations. We plan to engage the more than 82,000 potential change agents in our ASU community by using our campus as a living laboratory.

Active Engagement (working definition): *To promote the integration of sustainability principles into general practice and encourage personal initiative by providing learning opportunities and resources such as sustainability education and awareness programs relevant to the campus environment and encouraging the active engagement of all campus community members through education, participation and collaboration. This includes, but is not limited to: literacy, campus living laboratory programs, awards/recognition and overall community engagement.*

Active Engagement – Strategies, Objectives and Metrics

Strategies	Objectives	Target Year	Metrics
1 Faculty, Staff and Student Engagement	60 percent of faculty, staff and students to engage as active change agents in supporting the university's sustainability practices vision.	2015	Percent of ASU community participating in one or more sustainability related volunteer programs or projects per year.
2 Increase Community Awareness	Establish integrated family of programs to communicate sustainability information/practices/opportunities internal and external to the ASU community.	2011	Number of programs that communicate sustainability information/practices/opportunities to ASU community.
3 Staff Literacy/ Training	100 percent of ASU staff to participate in staff sustainability literacy program.	2015	Percent of ASU staff who have participated in a staff sustainability literacy program.
	10 percent of ASU staff to complete specialty (job specific) training.	2015	Percent of ASU staff who have completed specialty (job specific) training.
4 Staff Performance Appraisals	75 percent of ASU staff to achieve a sustainability rating of average or above in their performance evaluation.	2012	Percent of ASU staff with a sustainability rating of average or above in their last performance evaluation.
5 Increase Community Recognition	Establish sustainability recognition programs for members of ASU community.	2011	Number of sustainability recognition programs established.
			Number of sustainability related recognition awards issued per year.
			Percent of ASU community receiving sustainability related recognition awards per year.



goal 4

principled practice

INTEGRATE SUSTAINABILITY PRACTICE PRINCIPLES INTO 80 PERCENT OF CAMPUS OPERATIONS AND FUNCTIONS.

definition

ASU integrates its sustainability-based value system into day-to-day operations of the university. This means “walking the talk” and serving as an example to the worldwide community. This relates to a broad spectrum of campus areas, such as the quality of our work/learning environments, how we clean our buildings, the food we serve and the products we purchase. This goal touches heavily on creating a sense of place, productivity and health, as well as a sustainability-based value system. Our efforts demonstrate that sustainable operations can be maintained while at the same time allowing the university community to live, learn and work effectively. Principled practice also includes using new ideas and technologies to improve the university and enhance the campus environment.

Principled Practice (working definition): *Demonstrating our sustainability value system in the way our community engages, so that, as people go about their daily practices, they incorporate the sustainability principles that encompass the ASU vision. This means serving as an example to the worldwide community. This relates to a broad spectrum of campus areas such as the quality of our work/learning environments, how we clean our buildings, the food we serve, the products we purchase, etc. This goal touches heavily on creating a sense of place, productivity, health, procurement and creating a culture of sustainability.*

Principled Practice – Strategies, Objectives and Metrics

Strategies	Objectives	Target Year	Metrics
1a Practices Mandates: Construction	10 percent of new university construction and renovation contracts to be in compliance with ASU Sustainable Design Guidelines.	2012	Percent of new university construction and renovation contracts in compliance with ASU Sustainable Design Guidelines.
	50 percent of new university construction and renovation contracts to be in compliance with ASU Green Construction Guidelines.	2012	Percent of new university construction and renovation contracts in compliance with ASU Green Construction Guidelines.
	Transition guidelines to mandates – 100 percent of new university construction and renovation contracts to be in compliance with ASU Green Construction Mandates.	2014	Percent of new university construction and renovation contracts in compliance with ASU Green Construction Mandates.
1b Practices Mandates: Procurement	50 percent of new university contracts to be in compliance with ASU Green Procurement Guidelines.	2012	Percent of new university contracts in compliance with ASU Green Procurement Guidelines.
	Transition guidelines to mandates – 100 percent of new university contracts to be in compliance with ASU Green Procurement Mandates.	2013	Percent of new university contracts in compliance with ASU Green Procurement Mandates.
1c Practices Mandates: Events	10 percent of university sponsored events (including athletics) to be in compliance with ASU Green Event Guidelines.	2012	Percent of university sponsored events (including athletics) in compliance with ASU Green Event Guidelines.
	50 percent of university sponsored events (including athletics) to be in compliance with ASU Green Event Guidelines.	2015	
	Transition guidelines to mandates – 100 percent of university sponsored events (including athletics) to be in compliance with ASU Green Event Mandates.	2018	Percent of university sponsored events (including athletics) in compliance with ASU Green Event Mandates.
1d Practices Mandates: Offices	10 percent of university departments to be in compliance with ASU Green Office Guidelines.	2018	Percent of university departments in compliance with ASU Green Office Guidelines.
	50 percent of university departments to be in compliance with ASU Green Office Guidelines.	2020	
	Transition guidelines to mandates – 100 percent of university departments to be in compliance with ASU Green Office Mandates.	2035	Percent of university departments in compliance with ASU Green Office Mandates.
1e Practices Mandates: Labs	10 percent of university departments to be in compliance with ASU Green Labs Guidelines.	2025	Percent of university departments in compliance with ASU Green Labs Guidelines.
	50 percent of university departments to be in compliance with ASU Green Labs Guidelines.	2025	
	Transition guidelines to mandates – 100 percent of university departments to be in compliance with ASU Green Labs Mandates.	2035	Percent of university departments in compliance with ASU Green Labs Mandates.

Principled Practice – Strategies, Objectives and Metrics

Strategies	Objectives	Target Year	Metrics
1f Practices Mandates: Publications	10 percent of university publications to be in compliance with ASU Green Publication Guidelines.	2012	Percent of university publications in compliance with ASU Green Publication Guidelines.
	50 percent of university publications to be in compliance with ASU Green Publication Guidelines.	2015	
	Transition guidelines to mandates – 100 percent of university publications to be in compliance with ASU Green Publication Mandates.	2018	Percent of university publications in compliance with ASU Green Publication Mandates.
2 Products	Initial sustainability-based targets to be established for on-campus food sales (to include organic, local, natural and fair trade as appropriate for our community and region).	2012	Whether or not initial sustainability-based targets for on-campus food sales established.
	100 percent of products used by vendors and service providers on campus (food, cleaning, etc.) to comply with ASU Green Procurement Mandates.	2014	Percent of on-campus food items sold which include organic, local, natural and/or fair-trade ingredients.
	90 percent of cleaning products and non-lab chemicals used on campus to be biodegradable, organic and low packaging content.	2015	Percent of products used by vendors and service providers on campus (food, cleaning, etc.) that comply with ASU Green Procurement Mandates.
	100 percent of electronics to be EPEAT Gold, ENERGY STAR® products or those certified by the Federal Energy Management Program as energy efficient.	2015	Percent of cleaning products and non-lab chemicals used on campus that are biodegradable, organic and low packaging content.
	80 percent of durable and consumable goods used on campus by university employees and service providers to be comprised of recyclable, renewable, fair trade, sustainably farmed or local material.	2020	Percent of electronics that are EPEAT Gold, ENERGY STAR® products or those certified by the Federal Energy Management Program as energy efficient.
	90 percent of trademarked wear include organic, recycled, fair trade or other eco-friendly contents.	2020	Percent of durable and consumable goods used on campus by university employees and service providers comprised of recyclable, renewable, fair trade, sustainably farmed or local material.
3 Operations	100 percent of service providers and vendors to follow ASU sustainability practice principles when working on university property and/or projects.	2015	Percent of trademarked wear that include organic, recycled, fair trade or other eco-friendly contents.
	100 percent of service providers and vendors to follow ASU sustainability practice principles in their own operations.	2015	Percent of service providers and vendors that follow ASU sustainability practice principles when working on university property and/or projects.
	ASU sustainability practice principles integrated into 80 percent of all campus operations.	2018	Percent of service providers and vendors that follow ASU sustainability practice principles in their own operations.
			Percent of campus operations that have integrated ASU sustainability practice principles.

Principled Practice – Strategies, Objectives and Metrics

Strategies	Objectives	Target Year	Metrics
4 Quality of Life	Provide ASU employees with a safe and healthy working environment.	Ongoing	Downward trend in workplace injuries, reduced sick days.
			Continuing education and engagement opportunities made available to all employees.
			Improved workplace satisfaction.
	Provide ASU students with a safe and healthy learning, living (residents) and playing (sports, activities) environment.	Ongoing	Increased spirit, sense of place and participation in on-campus university sponsored activities.



organizing for success

This section briefly outlines the process used to develop this strategic plan, identifies the groups involved, their efforts to put the plan together and the challenges that impact the development of the plan as well as its implementation. ASU has developed institutional structures in the form of dedicated offices and broad-spanning groups to help advance this vision. These groups are key for coordination and cross-functional communication, but success relies on hundreds of leaders and the more than 82,000 potential change agents in making this vision a reality.

university sustainability practices office

The University Sustainability Practices Office in the Global Institute of Sustainability (GIOS) is responsible for guiding university-wide sustainability efforts, monitoring progress and coordinating implementation of this strategic plan. The office serves as the primary catalyst to bridge and facilitate integrated change on all four campuses and to transform the prevalent first cost culture to a multipronged approach. The office leverages current resources, programs and initiatives to build the collaborative university-wide efforts needed to meet the goals outlined in this plan.

The University Sustainability Practices Office is supported and guided by the Sustainable Practices Network (SPN) and the President's Working Group for Carbon Neutrality (WG-CN). The SPN and WG-CN serves in an advisory capacity with responsibility for maintaining the university-wide vision for this critical effort. This approach engages myriad methodologies, processes and policies, emphasizing collaboration not only among ASU stakeholders, departments and units but also between ASU and the local and global communities.

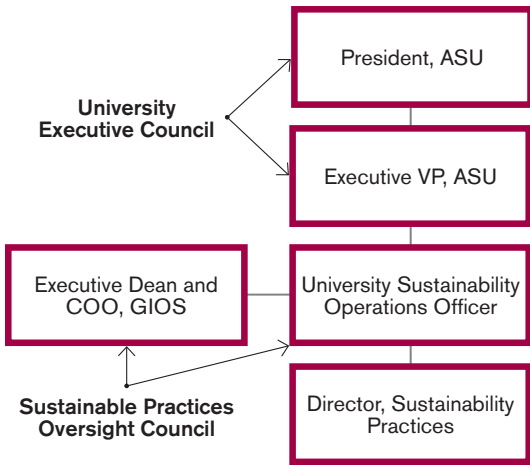
sustainability practices network (SPN)

ASU has embraced sustainability as a pan-university value, making it essential the university encourage sustainability practices in all operational areas. While many universities have one committee to lead sustainability efforts, the size and complexity of ASU require a different approach. A key component of this approach was to establish the Sustainability Practices Network (SPN), organized as a collection of specialized working groups designed to engage a significant cross section of the university community in the planning and initial implementation phases of this plan.

organizational structure of the sustainability practices network (SPN)

The following diagram shows the basic structure of the SPN.

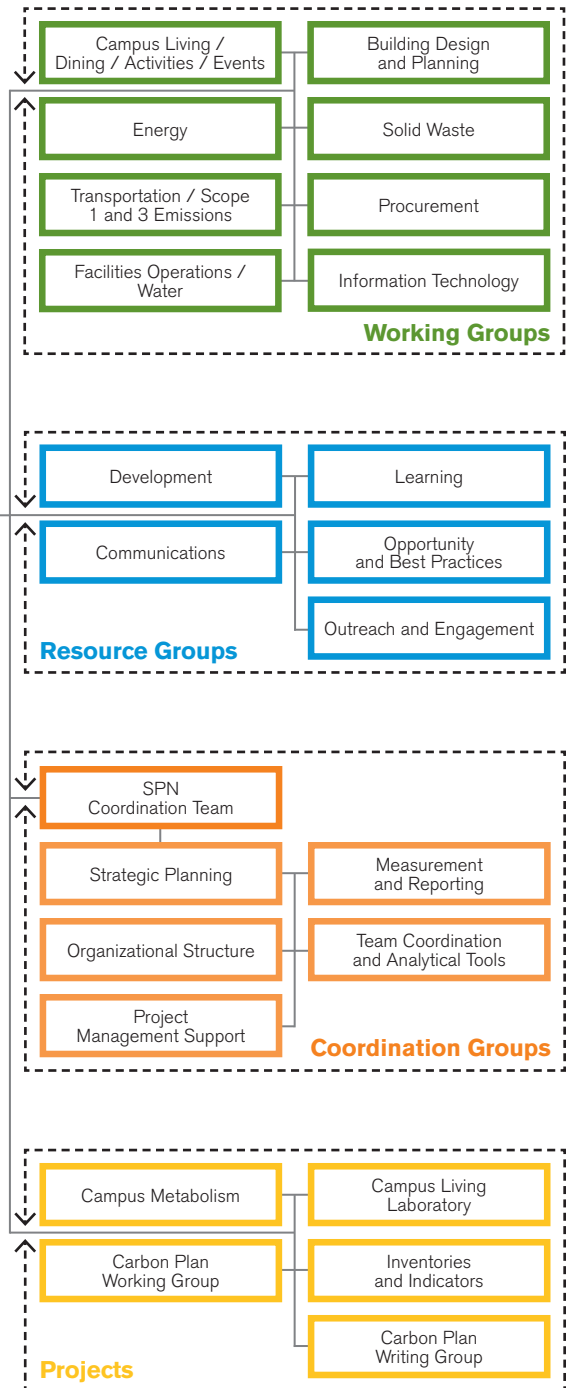
SPN consists of working groups organized around specific thematic areas and resource groups that provide support to the individual work groups and network as a whole. In addition, a broad-spectrum administrative project coordination team (Coordination Group) manages the plan development process by providing project management tools, coaching, consulting and technical resource management support to the working and resource groups. The working groups were made aware of relevant existing sustainability related projects at the university as well as relevant existing internal organizations.



An advisory group (Sustainability Practices Oversight Council) consisting of senior level academic and administrative officers from all campuses ensures the SPN is aligned with ASU's overall sustainability vision and mission. The advisory group also ensures any strategic recommendations presented to the president and his cabinet level officers aligns with the needs, interests and objectives of ASU's four campuses and major academic units.

the SPN includes eight specific working groups

- Facilities Operations** – Addresses all facilities operations and building management including water conservation/use, demand side energy, custodial and relevant service providers. Cuts beyond traditional operations units to include secondary stakeholders such as residential life and traditional academic, research and student/employee life support units. *This group shares responsibility across all four of the goals, with primary ownership for zero water waste.*



- **Energy** – Addresses supply side energy including on-site and off-site generation. Works with Salt River Project and Arizona Public Service as well as third party service providers. Works predominately with energy managers, experts and third party partners, with some interaction with secondary stakeholder user groups. *Carbon neutrality is this group's primary focus area.*
- **Building Design and Planning** – Predominantly comprised of members from the Office of University Architect, with some participation from secondary stakeholder groups such as facilities management and building users. Focused on both building management and the effect of building design on energy consumption. *Overlapping responsibility across all four goals.*
- **Solid Waste** – Include both aversion and diversion efforts with primary stakeholders from waste managers across the four campuses, including Facilities Development & Management, auxiliaries and athletics, as well as significant involvement from secondary stakeholders (waste generators) such as Residential Life, Student Life and academic and research programs. Also includes critical primary stakeholders with support functions such as procurement. *Primary focus is zero solid waste goal.*
- **Transportation** – Covers all aspects of transportation, including fleet, business travel and commuter. Smaller group made up primarily of Parking and Transit Services, with some input from faculty expertise, facilities and Financial Services. *Primary stakeholder for carbon neutrality and active engagement goals.*
- **Procurement** – Comprised primarily of procurement related personnel, with additional participation from faculty experts, University Business Services as well as Budget and Planning. *Overlapping responsibility across all four goals.*
- **Campus Living/Dining/Activities/Events** – Largest and most diverse group that includes heavy participation from all student life departments, with additional participation from third party vendors, student groups and various other secondary stakeholder groups. *Primary responsibility for active engagement but touches all four goals.*
- **Information Technology** – Includes primary stakeholder groups such as University Technology Office and third party service providers, as well as secondary stakeholder groups from energy and waste management teams. *Primary responsibility in zero solid waste and carbon neutrality goals, but touches all four goals.*

The above eight SPN working groups are supported by the resource groups that provide specialized support to help the network function and accomplish its mission. The SPN resource groups are:

- **Development** – Identifies funding sources for programs and projects that cannot be supported from existing operating budgets or capital project funds. This group helps to identify gifts, grants, revolving funds from utility savings, royalties, etc., that can advance our objectives.
- **Learning** – Develops a number of in-service training programs to enhance sustainability literacy among employees. A basic sustainability literacy program will be mandatory for all new employees and is designed to provide an overview of sustainability principles, ASU's commitment to sustainability and to help individuals identify the opportunities and responsibility they have to advance our operational sustainability goals.
- **Communications** – Focuses on highlighting notable plans, programs and projects; recognizing specific accomplishments by individuals and groups; and promoting engagement by internal and external organizations and individuals.
- **Opportunity and Best Practices** – Meets when needed to evaluate requests for partnerships and other opportunities that may potentially advance the sustainability agenda at ASU.

Each SPN working group is chaired or co-chaired by an individual with operational responsibility for all or a portion of the group’s focus. The chairs recruited other operational staff, faculty, researchers and students as group participants. Approximately 150 individuals from more than 40 operating areas participated in the strategic plan development process as a members of the SPN.

The SPN working groups are responsible for developing a sustainability strategy report for their area of focus. In developing their reports, each working group developed a set of specific recommendations for programs and projects that could be implemented in the near-term (0 to 5 years), mid-term (5 to 10 years) and long-term (more than 10 years). Each team was then asked to identify resources, programs or changes recommended, estimated return on investment, in financial and non-financial terms, policies to be developed and/or changed and specific challenges or risks associated with each recommendation.

Each working group presented its recommendations to the Sustainability Practices Oversight Council. The council used these recommendations to create a number of themes used to establish guidelines for ASU’s sustainability efforts, including:

- The importance of alignment in our overarching goals.
- The need for a “systems” perspective and system-based measurements together with clear guidance, shared principles and goals.
- The requirement for developing solid baseline data and applying these data to define opportunities.
- Matching goals and success metrics to locally relevant outcomes.
- Focusing on a combined evidence-based, research enabled and experiment/action-oriented approach.
- Education, effective communications and recognition are central to success. Actions, measureable outcomes and appropriate resources must support education and communication efforts.
- Prioritization in the near term is dependent upon determining return on investment and the ability to actually take action.

Contribution to the strategic goals by the SPN working groups are as follows:

	Carbon Neutrality	Zero Waste (Solid)	Zero Waste (Water)	Engagement	Principled Practice
Facilities Operations (includes water)	X	X	X	X	X
Energy	X			X	X
Building Design and Planning	X	X	X	X	X
Solid Waste	X	X		X	X
Transportation	X			X	X
Procurement	X	X	X	X	X
Campus Living, Dining, Activities and Events	X	X	X	X	X
Information Technology	X	X		X	X

working group for carbon neutrality (WG-CN)

The President's Working Group for Carbon Neutrality (WG-CN) focuses on carbon neutrality. The group is comprised of high-level administrators whose task is to advance the university-wide application of ASU's Carbon Neutrality Action Plan, particularly in the areas of education, research and outreach.

The WG-CN meets twice a year to:

- Monitor university progress toward the goal of carbon neutrality by 2025.
- Review and approve updates to the Carbon Neutrality Action Plan (two year cycle).
- Advise administrative officers regarding operational, educational, research and community outreach opportunities, needs and priorities to satisfy the requirements of ASU's Carbon Neutrality Action Plan and the ACUPCC.
- Report to the university president on a regular basis.
(more information at <http://carbonzero.asu.edu>)

operating units

Stakeholders

ASU's operations sustainability efforts impact every facet of university life. As a result, as can be seen below, this makes for a broad range of stakeholders who operate with the new sustainability driven systems.

Stakeholders and their principal roles and primary benefits:

Stakeholder Categories	Principal Role	Change Agent Leadership –					Primary Benefits
		Primary (P)	Secondary (S)				
		CN	SW	WW	AE	PP	
Academic Units	X	S	S	S	S	S	Good PR, improved recruiting, improved retention
Athletics	X	P/S	P/S	P/S	P/S	P/S	Lower costs, improved efficiencies, good PR
Business and Financial Services	X	S	S	S	S	S	Lower costs, improved efficiencies
Employees	X	S	S	S	S	S	Sense of place, reduced operating cost
Facilities	X	P/S	P/S	P/S	P/S	P/S	Lower costs, improved efficiencies, good PR
Health and Safety	X	P/S	P/S	P/S	P/S	P/S	Lower risk, sense of place
Research Units	X	S	S	S	S	S	Campus living lab, higher quality work environment
Students	X	S	S	S	S	S	Higher quality living, learning, working environment, sense of place, increased degree value, lower costs, real world learning opportunities
Technology and Communications	X	P/S	P/S	P/S	P/S	P/S	Increased efficiencies, lower costs, improved work environment
Transportation and Fleet	X	P/S	P/S	P/S	P/S	P/S	Increased efficiencies, lower cost
Vendor Partners	X	P/S	P/S	P/S	P/S	P/S	Increased efficiencies, lower costs, good PR

financial plan and resources

The successful acquisition and management of financing enables ASU to create various sustainability projects and programs, provide resources and help to expand and maintain these efforts.

Given ASU's growth projections, implementing the full strategic plan will be costly but not insurmountable, thanks to a variety of funding mechanisms. We are assessing university-based socially responsible investments, opportunities for improved efficiency and the restructuring of financing. We are also continuing to develop greater collaboration between the research, academic and operations functions of the university to increase our competitive advantage for public and private funding. The following is a list of proposed funding sources and investment options that enables us to meet our goals:

- **Operating funds from organizational units** – Many of the projects and programs being developed and implemented to advance sustainability objectives are funded from university operations budgets. This can include Facilities Development and Management, auxiliary units, academic units and research centers. These funds would be used for operational expenses and adopting sustainability practices. Essentially a net decrease in cost results in an increase in sustainability practices through holistic approaches.
- **Capital funds** – Major projects may be funded in conjunction with the university's capital development process by engineering capital projects holistically and sustainably.
- **Grants, gifts and sponsorships** – Some university sustainability projects and programs have the potential to attract funding from outside sources, including grants, gifts and sponsorships. Some sponsorship may be tied to agreements for goods or services if appropriate.
- **Licensing royalties** – As a leader in sustainability, ASU has the opportunity to create products, programs or software with commercial value and seek opportunities to develop, protect and license intellectual property. Then earmarking a percentage of licensing revenues to advance our sustainability plan.
- **The Sustainability Initiatives Revolving Fund (SIRF)** – The SIRF exists for the purpose of funding projects to enhance campus sustainability efforts and improve the overall quality of the physical and social environment on campus. SIRF is open to proposals from faculty, staff, students, community members and groups consisting thereof to provide an opportunity for active engagement and an enhanced learning experience through direct, impactful sustainability projects related to the campus.

SWOT analysis



overview

SWOT (strengths, weaknesses, opportunities and threats) is a basic communications analysis tool used to identify intrinsic (strengths and weaknesses) and extrinsic issues (opportunities and threats) that may assist the organization to accomplish an objective, as well as what obstacles must be overcome or minimized to achieve the desired result.

strengths

Strong Leadership – ASU has a strong cadre of leaders who share a vision of ASU becoming a highly sustainable organization.

Global Institute of Sustainability (GIOS) – ASU is the location of GIOS.

Organizational Focus – The vision of the university's leadership, the establishment of the Global Institute of Sustainability and our organizational focus on sustainable living continues to attract experts on the subject to join ASU as members of both the academic and operational staff.

Influence – Because it is already recognized as a leader in sustainability, ASU influences the way other organizations view and take action on sustainable practices, and can guide others in their efforts.

Location – ASU is located in a fragile desert environment and requires careful management of precious resources that avoid damaging the ecology that surrounds us.

Visibility – ASU is known.

opportunities

Living Laboratory – As a state university, ASU can serve as a long-term test bed (living laboratory) for many new ideas, technologies and practices.

Leverage Research – Because ASU is a research university, there are many untapped opportunities to build on our own extensive research efforts for new technologies and ideas that help the university become more sustainable.

Leverage Partnerships – ASU can leverage its partnerships with corporations, non-profits and private entities to acquire funding and support for sustainability related activities and research.

Community Education – ASU can engage its more than 82,000 potential change agents by increasing sustainability literacy of its students, faculty and staff.

weaknesses

Organizational Complexity – Large complex organizations are sometimes slow to adapt to change.

Growth – Growth has occurred very rapidly at ASU in recent years; this is expected to continue in the near future.

Inconsistent Definitions of Sustainability – At this point, ASU has not officially settled on a single organizational definition of sustainability.

Data Collection – ASU must improve the university's current organizational ability to gather, analyze and use data for decision making.

Deteriorating/Aging Infrastructure – Resolving deferred maintenance continues to be a challenge.

Commitment Disparity – Many competing values across the university landscape.

Staff/Student Square Footage Ratios – ASU's staffing per square foot/student ranks in the bottom third per capita as compared to other institutions of higher learning.

threats

Finances – ASU is facing financial challenges as a result of the current economic environment.

Political and Legal Barriers – As sustainability becomes more and more important, the university may encounter political or legal barriers that may need to be addressed or changed in the appropriate forums.

Value Disparity – Managing competing values throughout our state and many stakeholder groups can be difficult.

tactics – implementing the strategies

goal 1 carbon neutrality

To optimize early benefits in the area of carbon neutrality, ASU is focusing its initial efforts on eliminating Scope 1, 2 and non-transportation Scope 3 emissions by 2025 and the mitigation of Scope 3 transportation emissions by 2035.

The university is implementing programs and policies to reduce, and eventually eliminate, the carbon footprint of the university using the following strategies.

strategy 1 energy consumption and efficiency

Policy / Procedure / Purchasing		
On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Apply integrated conservation education programs focusing on reduction of phantom energy use for office and classroom equipment.	Evaluate Arizona's capital funding policies and processes; recommend adoption of life cycle cost analysis and increase stringent design standards.	Implement distributive billing program – apportioning energy costs and savings per user group.
Prohibit the purchase of new, inefficient and replacement systems, i.e. appliances, controls, etc.	Facilitate collaboration between classroom and research activities to support energy conservation projects on campus.	Complete lighting retrofits.
Evaluate the latest opportunities, technologies and applications as they apply to a systems approach regarding energy conservation and efficiency.	Enforce efficiency criteria for vending machines, including location.	Improve efficiency of insulation and building envelope on existing infrastructure. Embrace and embody green building practices (passive solar, thermal mass, low-e glazing).
Seek holistic "out of the silo" solutions.	Eliminate individual department server rooms. Construct or outsource the development of a single data center.	Develop power correction plan, addressing facilities design and power efficiencies issues. Synch systems.
	Complete lighting retrofits.	
	Change capital funding policies and processes at the state level to adopt life cycle costing and more stringent design standards.	
Education / Awareness		
On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Apply integrated conservation education programs focusing on reduction of phantom energy use for office and classroom equipment.	Facilitate collaboration between classroom and research activities to support energy conservation projects on campus.	Implement distributive billing program – apportioning energy costs and savings per user group.
	Add generators to workout equipment located in the Student Recreation Complex to promote awareness.	

Systems / Infrastructure

On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Prohibit the purchase of new, inefficient and replacement systems, i.e. appliances, controls, etc.	Evaluate state capital funding policies and processes; recommend adoption of life cycle cost analysis and increase stringent design standards.	Improve efficiency of insulation and building envelope on existing infrastructure. Embrace and embody green building practices (passive solar, thermal mass, low-e glazing).
Seek holistic "out of the silo" solutions.	Expand Campus Metabolism to all buildings on all campuses to provide real time and historical energy use data as well as other resource information. Eliminate individual department server rooms. Construct or outsource the development of a single data center.	Develop power correction plan, addressing facilities design and power efficiencies issues. Synch systems.

Planning / Building Design

On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Prohibit the purchase of new, inefficient and replacement systems, i.e. appliances, controls, etc.	Evaluate Arizona's capital funding policies and processes; recommend adoption of life cycle cost analysis and increase stringent design standards.	Complete lighting retrofits.
Design buildings to higher level of energy efficiency. Scrutinize value-engineering recommendations. Encourage efficient building/space appropriation and use (controls, design, technology).	Expand Campus Metabolism to all buildings on all campuses to provide real time and historical energy use data as well as other resource information.	Upgrade insulation and building envelope. Embrace and embody green building practices (passive solar, thermal mass, low-e glazing).
Evaluate the latest opportunities, technologies and applications as they apply to a systems approach regarding energy conservation and efficiency.	Eliminate individual department server rooms. Construct or outsource the development of a single data center.	Develop power correction plan, addressing facilities design and power efficiencies issues. Synch systems.
Maintain ongoing commissioning of building systems. Replace inefficient HVAC equipment.	Consolidate office equipment technology.	
Seek holistic "out of the silo" solutions.	Consolidate building usage during summer/holiday periods (classroom, conference space, and residence halls) to reduce heating and cooling demands. Implement energy surcharge for off-hour usage.	

All

On-going	Long-term / 10+ Years
Where applicable, allow employees to telecommute and/or adopt alternative work schedules.	Expand ASU Online education/courses. Focus on increasing enrollment and reducing facility demand simultaneously.

strategy 2 renewable energy – on-site

Policy / Procedure / Purchasing		
On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Apply integrated conservation education programs focusing on reduction of phantom energy use for office and classroom equipment.	Evaluate Arizona's capital funding policies and processes; recommend adoption of life cycle cost analysis and increase stringent design standards.	Implement distributive billing program – apportioning energy costs and savings per user group.
Systems / Infrastructure		
On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Evaluate the latest opportunities, technologies and applications, as they apply to a systems approach to on-campus energy generation.	Expand solar installations to all available parking lots and to new and existing buildings.	Develop large-scale renewable energy-based domestic water heating.
		Diversify energy portfolio to include renewable base load power options.
Develop waste to energy opportunities.		
Seek solutions with multiple benefits across systems and disciplines.		
Planning / Building Design		
On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Evaluate the latest opportunities, technologies and applications, as they apply to a systems approach to on-campus energy generation.	Expand solar installations to all available parking lots and to appropriate new and existing buildings.	Develop large-scale renewable energy-based domestic water heating.
		Investigate using synthetic gas (from a waste water treatment facility or Biomass Gasification Facility) as possible natural gas substitute for campus co-generation plants. Investigate geothermal heat pump technology for the Tempe and West campuses, and geothermal-based hot water options at the Polytechnic campus.

strategy 3 renewable energy – off-site

Policy / Procedure / Purchasing	
On-going	Long-term / 10+ Years
Monitor usage and purchased energy rate structure for best rate.	Purchase green power certificates.
Systems / Infrastructure	
On-going	Near-term / 0-5 Years
Evaluate the latest opportunities, technologies and applications, as they apply to a systems approach to on-campus energy generation.	Investigate off-site renewable energy generation partnerships (State Trust Land).

strategy 4 transportation

Policy / Procedure / Purchasing			
On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years	Long-term / 10+ Years
Reduce total commuter emissions by 50 percent through alternative transportation (expanded U-Pass usage, bicycle options and Zipcar membership).	Implement incentive program for carpools and owners of hybrid, high efficiency or alternative fuel vehicles. Discounted parking permits and special parking privileges will be considered.	Ban on-campus parking for freshman students who reside on campus.	Offset all carbon emissions related to university funded travel and commuter travel through verifiable carbon offsets.
Encourage alternative transportation and/or reduced/no emission vehicles for ground transportation.	Create infrastructure to support hybrid and alternative fuel vehicles, such as charging stations and alternative fuel pumps.		
Reduce environmental impacts for university-affiliated travel through fees, with monies supporting carbon reduction projects on campus (optional years 1 and 2; mandatory going forward).	Improve access and availability of video conferencing capabilities to reduce business travel emissions by two percent.		
Replace all university-owned vehicles with alternative fuel vehicles.	Transition all shuttle vendor contracts to alternative fuels or electric vehicles. Reduce diesel emissions from university-owned vehicles by 100 percent through waste oil sourced bio-diesel.		

Education / Awareness	
On-going	Near-term / 0-5 Years
Reduce total commuter emissions by 50 percent through alternative transportation (expanded U-Pass usage, bicycle options and Zipcar membership).	Implement incentive program for carpoolers and owners of hybrid, high efficiency or alternative fuel vehicles. Discounted parking permits and special parking privileges will be considered.
Identify and support telecommuting/virtual classroom options for students, staff and faculty members.	Expand staff bicycle usage.
Reduce total commuter emissions by educating students, staff and faculty members on alternative transportation options.	Improve access and availability of video conferencing capabilities to reduce business travel emissions by two percent.
Transition from commuter campus to on-campus living options.	Develop marketing modules to educate staff and faculty members on how commuting to campus contributes to carbon emissions.
Reduce environmental impacts for university-affiliated travel through fees, with monies going toward supporting carbon reduction projects on campus (optional years 1 and 2; mandatory going forward).	

Systems / Infrastructure

On-going

Reduce total commuter emissions by 50 percent through alternative transportation (expanded U-Pass usage, bicycle options and Zipcar membership).

Transition from commuter campus to on-campus living options.

Encourage alternative transportation and/or reduced/no emission vehicles for ground transportation.

Near-term / 0-5 Years

Create infrastructure to support hybrid and alternative fuel vehicles, such as charging stations and alternative fuel pumps.

Improve access and availability of video conferencing capabilities to reduce business travel emissions by two percent.

Reduce diesel emissions from university-owned vehicles by 100 percent through waste oil sourced bio-diesel.

Planning / Building Design

On-going

Transition from commuter campus to on-campus living options.

Near-term / 0-5 Years

Create infrastructure to support hybrid and alternative fuel vehicles, such as charging posts and alternative fuel pumps.

strategy 5 campus operations

Policy / Procedure / Purchasing

Near-term / 0-5 Years

Expand use of organic fertilizer obtained from closed loop recycling of campus green waste.

Long-term / 10+ Years

Sponsor and utilize innovative, verifiable carbon emission credits to offset all carbon emissions related to miscellaneous campus practices.

Planning / Building Design

Near-term / 0-5 Years

Retrofit chillers to reduce coolant loss. Replace coolants with low/no emission impact. Monitor and repair all leaks.

strategy 6 carbon offsets (last resort)

Policy / Procedure / Purchasing

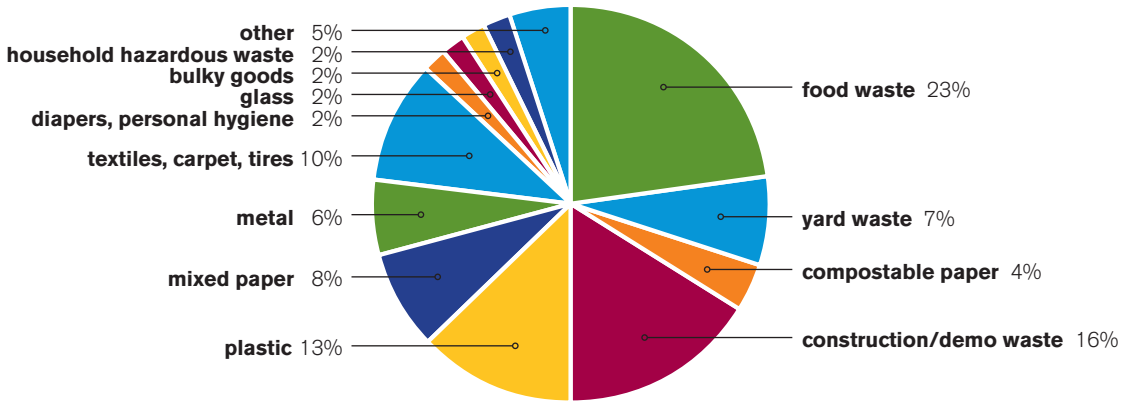
Long-term / 10+ Years

Create or purchase verifiable carbon offsets (if needed) from an appropriate brokerage for remaining Scope 1, 2 and non-transportation Scope 3 emissions.

goal 2a

zero solid waste

The composition of solid waste generated by the university is as follows:



The university's efforts to achieve zero solid waste encompass ongoing aversion and diversion strategies. Knowledge gained and applied from initial projects and/or programs implemented to achieve earlier reduction percentages will be embraced and enhanced to improve aversion and diversion results. Although in the long run diversion is expected to contribute twice as much as aversion to the reduction of solid waste generated, the ratio/balance between the strategies will be monitored and adjusted as needed. However, the university is aware that despite of all efforts small amounts of residual waste is inevitable.

The university is implementing programs and policies to reduce the campus generated solid waste using the following strategies:

strategy 1 aversion

Policy / Procedure / Purchasing	
On-going	Near-term / 0-5 Years
Promote and maintain SunSET as a viable means for departments to share under-utilized resources internally.	Aggregate related class and research materials to improve purchasing efficiently and reduce waste.
Implementation of green event guidelines across all current and new official university events.	Establish a target for reducing packaging waste through purchasing activities.
	Ensure all RFPs reflect university waste aversion values with emphasis placed on minimizing packaging.
	Educate faculty and staff to increase awareness of waste reduction techniques and resources.
	Develop a departmental waste audit process to identify and resolve problem areas.
Education / Awareness	
Near-term / 0-5 Years	
Aggregate related class and research materials to improve purchasing efficiently and reduce waste.	
Educate faculty and staff to increase awareness of waste reduction techniques and resources.	

strategy 2 diversion

Policy / Procedure / Purchasing

Near-term / 0-5 Years

Implement framework addressing purchasing and logistics for green events. Implement framework addressing waste generated by academic projects with a goal of 100 percent diversion.

Expand and market SunSET, including the addition of lab chemicals.

Education / Awareness

On-going

Near-term / 0-5 Years

Provide campus residents with reasonable alternatives for disposable items via campus markets and stores.

Facilitate collaboration between class and research projects to support waste reduction on campus.

Expand integrated education and awareness program.

Conduct routine interactive presentations with staff and faculty members to increase awareness of waste reduction techniques and resources.

Implement lab chemical distillation program where appropriate with a goal to reduce 95 percent of non-hazardous materials and lab chemical waste.

Develop a departmental waste audit process to identify and remedy problem areas.

Expand and market SunSET, including the addition of lab chemicals.

Brand ASU as the home of "the end of waste" in higher education.

Systems / Infrastructure

Near-term / 0-5 Years

Mid-term / 5-10 Years

Implement framework addressing purchasing and logistics for green events. Implement framework addressing waste generated by academic projects with a goal of 100 percent diversion.

Divert 100 percent of organic waste to composting and/or gasification facilities.

Divert 100 percent of scrap metal waste.

Expand recycling alternatives for special collections.

Divert 100 percent of both pre-consumer campus dining generated food waste and university sponsored event generated recyclable waste.

Divert 95 percent of non-hazardous construction and demolition waste.

Planning / Building Design

Near-term / 0-5 Years

Implement framework addressing purchasing and logistics for green events. Implement framework addressing waste generated by academic projects with a goal of 100 percent diversion.

Facilitate recycling and/or repurposing of 95 percent of non-hazardous construction waste and 80 percent of move-in related cardboard waste.

All

Near-term / 0-5 Years

Locate a recycling container next to every trash container on all campuses.

goal 2b

zero water waste

The university will implement programs and policies to reduce the campus water waste using the following strategies:

strategy 1 water conservation and efficiency

Policy / Procedure / Purchasing		
On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Retrofit water appliances with low-flow fixtures as spaces are remodeled.	Establish a water budget for the campus landscaping based on university values and needs. Modify landscaping as necessary.	Implement demonstration rainwater capture and gray water systems on future buildings and redirect current flooding for irrigation purposes.
	Establish and implement efficiency mandates for reverse osmosis systems used in university-based research facilities and power plants.	Ensure all campus plumbing water fixtures meet the EPA WaterSense specifications.
Education / Awareness		
Near-term / 0-5 Years	Mid-term / 5-10 Years	
Reduce university-wide water consumption by 10 percent through education, principled practice and active engagement activities.	Meter water usage on 20 percent of major campus buildings.	
Systems / Infrastructure		
Near-term / 0-5 Years	Mid-term / 5-10 Years	Long-term / 10+ Years
Capture discharge and reuse water from all reverse osmosis industrial systems.	Retrofit water fixtures in campus dining facilities and university research facilities.	Develop a wastewater processing/ treatment system to enable reuse of domestic water for irrigation.
Install meters on irrigation system to establish baseline. Current configuration does not support accurate measurement of irrigation water.	Implement demonstration rainwater capture and gray water systems on future buildings and redirect current flooding for irrigation purposes.	
Mandate usage of pool covers at all university pools.	Meter water demand at 20 percent of major campus buildings.	
	Assess and repair existing irrigation system, including installation of drip fixtures achieving 85 percent efficiency and an improved watering schedule whereby 100 percent of irrigation is done at night.	

Planning / Building Design		
Near-term / 0-5 Years	Mid-term / 5-10 Years	Long-term / 10+ Years
	Retrofit water fixtures in campus dining facilities and university research facilities.	Develop a wastewater processing/ treatment system to enable reuse of domestic water for irrigation.
Install meters on irrigation to establish a baseline. At this time, the amount of water used for irrigation cannot be accurately measured.	Implement demonstration rainwater capture and gray water systems on future buildings and redirect current flooding for irrigation purposes.	
	Assess and repair existing irrigation system, including installation of drip fixtures achieving 85 percent efficiency and an improved watering schedule whereby 100 percent of irrigation is done at night.	

strategy 2 water capture and reuse

Systems / Infrastructure	
Near-term / 0-5 Years	Mid-term / 5-10 Years
Evaluate and expand storm water management policy to consider passive water capture on all new construction to resolve current building flooding issues and create water source for irrigation.	Investigate transition to on-site wastewater processing/ treatment system to enable reuse of domestic water for irrigation.
Evaluate efficacy and risk of current dry wells.	

Planning / Building Design	
Near-term / 0-5 Years	Mid-term / 5-10 Years
Evaluate and expand storm water management policy to consider passive water capture on all new construction to resolve current building flooding issues and create water source for irrigation.	Investigate transition to on-site wastewater processing/ treatment system to enable reuse of that water for irrigation.
Evaluate efficacy and risk of current dry wells.	

goal 3 active engagement

The university will implement programs and policies to encourage a sustainability-based culture on campus using the following strategies:

strategy 1 faculty, staff and student engagement

Education / Awareness	
On-going	Near-term / 0-5 Years
Assess current engagement levels and effectiveness of marketing.	Campus Living Laboratory – show engage faculty/staff/ student research and learning on campus projects through the Sustainability Connect platform.
Active demonstration of sustainable practices.	Encourage student engagement via such avenues as student governments, Programming Activities Board's (PAB), and Residence Hall Association (RHA) and through the development of the Campus Student Sustainability Initiatives (CSSI).
Marketing accomplishments and challenges.	Roll-out comprehensive recognition to expand current efforts of President's Award and Sun Award for Sustainability.
	Develop ambassador network that would include Devils Advocates, University Staff Council, and Faculty Senate to get others on board, help spread the message and get employees to take action. (Tied to recognition platform).

strategy 2 increase community awareness

Policy / Procedure / Purchasing	
Near-term / 0-5 Years	
Sustainability language incorporated into all staff position descriptions.	

Education / Awareness	
On-going	Near-term / 0-5 Years
Ongoing public relations campaign targeted to student outlets throughout the year – <i>The State Press</i> , <i>College Times</i> , <i>New Times</i> , <i>The Blaze</i> , <i>MyASU</i> , campus kiosks, bus stop posters, digital screens, Facebook and other media.	Expand staff sustainability literacy module to include interactive training on green office, event and lab platforms.
Continually communicate progress to all operational levels (individuals, departments, ASU).	Promote SunSET, the recycling program, water/energy conservation tips and green purchasing guidelines through creative multimedia such as Pocket Change.
Update staff sustainability literacy training every other year.	Expand campus resource consumption awareness through expanded Campus Metabolism dashboard.
Deploy greening maroon and gold identity and other tools to various websites on campus, etc.	Promote sustainability at athletic events and other activity venues through engaging multimedia, fun games and actively promoting recycling with volunteers.
	Develop sustainability content in new student orientations.

strategy 3 staff literacy / training

Education / Awareness		
On-going	Near-term / 0-5 Years	Mid-term / 5-10 Years
Develop sustainability-focused continuing education programs.	Develop online green office, event and laboratory education.	Develop CE Literacy for targeted departments such as capital programs, purchasing, and facilities operations.
Produce newsletters and ongoing media communications including a regular section in <i>ASUNews Now</i> .		
Update staff sustainability literacy training every other year.		

strategy 4 staff performance appraisals

Policy / Procedure / Purchasing
On-going
Set expectations for all employees based on departmental targets.
Monitor employees' efforts contributing to department's progress in meeting stated goals and living the sustainability culture (see Principled Practice).
Reward and recognize employees for their efforts.

Education / Awareness
On-going
Establish targets for all employees based on departmental goals.

strategy 5 increase community recognition

Education / Awareness
Near-term / 0-5 Years
Recognize progress and contributions for all areas of the university through a variety of mechanisms.
Establish department sustainability champions program.
Expand formal recognition of significant efforts to foster active engagement. Examples of recognition platforms currently in use are: <ul style="list-style-type: none"> - President's Award for Sustainability - Immediate recognition tools (Sun Award or similar program for students TBD) - Green Team Volunteers - Monthly highlights communication

goal 4

principled practice

At ASU, principled practice sets the stage for accomplishing the other goals. Principled practice lays the foundation for implementation of the strategic plan itself and establishes the culture and values to sustain ASU's efforts.

The actions taken by the operations staff on a daily basis ensures the long-term success and maintenance of what ASU has committed to accomplishing. Consequently, critical steps include educating the staff, tying the achievement of the strategic goals to their performance appraisals, and continually communicating progress to all operational levels.

The university will implement programs and policies to foster an environment that facilitates integration of sustainability principles into day-to-day operations using the following strategies:

strategy 1 practice mandates

Policy / Procedure / Purchasing	
Near-term / 0-5 Years	Mid-term / 5-10 Years
Measure effectiveness of Sustainable Design Guidelines for new construction, update as necessary and advance to mandate status.	Determine efficacy of Green Procurement Guidelines, update as necessary and move to mandate status.
Expand Sustainable Design Guidelines to apply to minor renovations.	Evaluate Green Office and Green Event Guidelines and require adherence once 50 percent participation is achieved.
Develop and launch Green Publication Guidelines for all university publications.	Measure value of Green Publication Guidelines, update as necessary and move to mandate status.
Measure efficacy of Green Procurement Guidelines, update as necessary and move to mandate status.	Develop reporting strategy on the outcomes for all mandates and report to community on regular basis.
Systems / Infrastructure	
Near-term / 0-5 Years	
Measure efficacy of Sustainable Design Guidelines for new construction, update as necessary and advance to mandate status.	
Expand Sustainable Design Guidelines to include minor renovations.	
Planning / Building Design	
Near-term / 0-5 Years	Mid-term / 5-10 Years
Measure efficacy of Sustainable Design Guidelines for new construction, update as necessary and mandate guidelines.	Measure effectiveness of Sustainable Design Guidelines for new renovations, update as necessary and move to mandate status.
Expand Sustainable Design Guidelines to include minor renovations.	

strategy 2 products

Policy / Procedure / Purchasing	
Near-term / 0-5 Years	Mid-term / 5-10 Years
Develop green cleaning evaluation protocol.	Evaluate targets for local/regional/organic food purchases for all campuses (dining halls, campus stores and events). Adjust targets based on new findings.
Establish targets for local/regional/organic food purchases for all campuses (dining halls, campus stores and events).	
Establish tracking and verification system for all green procurement guidelines.	
Implement 95 percent target for sustainable cleaning practices across all campuses (including paper products) to reflect sustainability principles.	
Require all paper used by ASU to be 100 percent recycled content for greater sustainability impact.	

Education / Awareness
Near-term / 0-5 Years
Transition 75 percent of all non-textbook ASU bookstore inventory to green products.

strategy 3 operations

Policy / Procedure / Purchasing
Near-term / 0-5 Years
Develop and adopt full Scope evaluation process for all operations activities related to decision-making.
Establish formal green cleaning program including tracking and verification components.
Establish formal green operations policies.
Establish anti-idling policy for all campuses.
Assess and update sustainability metrics and accomplishments and report findings to the community.

Education / Awareness
Near-term / 0-5 Years
Establish anti-idling policy for all campuses.

Systems / Infrastructure
Near-term / 0-5 Years
Expand use of organic fertilizer obtained from closed loop recycling of campus green waste to all campuses and athletics, i.e. Phosphorous free landscaping practices.
Establish formal green cleaning program including tracking and verification component.

All
Near-term / 0-5 Years
Develop unified recycling program across all four campuses

strategy 4 quality of life

Policy / Procedure / Purchasing

Near-term / 0-5 Years

Establish metrics for assessing health and productivity in our work and learning environments and impact of community space on sense of place.

Establish policy for initial standards and on-going verification of indoor air quality, natural day lighting (or equivalent) and ergonomic requirements for all workspaces.

Develop master design plan for campuses indoor and outdoor spaces that foster sense of place, encouraging high-quality casual and formal gathering spaces that support university engagement goals.

Expand training and continuing education opportunities for all staff.

Near-term / 0-5 Years

Expand training and continuing education opportunities for all staff.

All

On-going

Provide ASU employees with a safe and healthy working environment.

Provide ASU students with a safe and healthy learning, living (residents) and playing (sports) environment.

environmental indicator data measurement system (EIDMS)

The results of actions related to this plan and changes associated with them will be captured, analyzed and reported through an information tracking system, for use in decision making at all levels of the university. The system will provide a secure, accessible and compatible platform where multiple users can enter both environmental and operational information.

ASU is in the process of evaluating a web-based Environmental Indicator Data Measurement System (EIDMS) for the university that serves as a central depository of environmental and operational data. Requirements for the system as follows:

- Track user access and usage time.
- Allow access from various portals.
- Accommodate various measurements including but not limited to kilowatt hours, therms and pounds, as deemed appropriate for environmental data collection.
- Accommodate communication/input data from various sources, i.e., Access databases, Excel spreadsheets, SQL code, AS400 and Keyboard.
- Provide charts and graphs displaying the university's progress in sustainability efforts.
- Allow end users to access, view, search, extract and manipulate the environmental data and give them the ability to generate reports, forecasts and projections for use in research.

The EIDMS depository would be the primary location for retention of environmental data. All data will be retained in a secure location that is backed up regularly. Stored data will be made readily available to multiple users at any one time and across various environmental categories. Where appropriate, validation and data integrity will be applied and maintained.

ASU is a large university with multiple campuses, so therefore EIDMS must capture data based on campus and department groups as well as cost and units of measurement in order to more specifically track the progress of the university's sustainability initiatives. The system will have the additional capacity to graphically display our progress toward meeting all of our sustainability goals, including carbon neutrality, to enable better decision-making.

sampling of achievements to date

This is a partial listing of the actions that the university has taken in its operations and practices.

CARBON NEUTRALITY

Solar Energy – By mid 2011, ASU will have installed up to 10 megawatts DC of solar power. This is the largest solar portfolio at any U.S. university.

Transportation – ASU has developed a transit pass program for students, faculty and staff that provides a subsidy for bus and light rail transportation throughout the greater Phoenix area. Additionally, ASU brought a car-sharing program to Arizona and has a car pool program that includes special parking privileges. A student-run bicycle co-op offers low or no cost bike repairs, free bike rentals and discounted biking supplies.

Campus Metabolism – Developed by an internal ASU team, this is an interactive web tool that displays real time energy use on campus. Currently, we are using Campus Metabolism to monitor more than 25 buildings including most residence halls on the Tempe campus, several research and academic buildings, and several activities related buildings. It is the plan to have Campus Metabolism monitor an additional 50-100 buildings by the end of 2011. For more information, go to <http://cm.asu.edu>.

Performance Management Agreements – ASU is currently finishing Phase II of a performance management agreement where, through the upgrade of our utilities infrastructure, we are working to reduce the energy consumption on the Tempe campus, in the form of electricity and natural gas, as well as reduce the use of chilled water and cooling. This is a \$70 million investment in energy efficiency. Work to date includes the retrofit of interior lighting systems with lower wattage fluorescent light bulbs; the installation of 78 watt LED parking structure fixtures; changing out of campus exterior lighting for lower wattage fixtures; repairing and replacing steam traps; upgrading building HVAC controls with direct digital control systems and VAV retrofit; installing occupancy sensors; installing zone pressure sensors, Aircurity, and Phoenix Valves on laboratory fume hoods; and implementing an ongoing continuous commissioning program. An additional \$100 million worth of potential projects have been identified.

Behavior Modification – Currently working with outside partner on program specifically geared toward energy conservation through human behavioral modification and building management practices.

ZERO SOLID WASTE

Paint Shop Diversion Program – The ASU paint shop in Facilities Development and Management filters and stirs odd lots of old paint for use on small projects around the campus and community.

Campus Harvest – The ASU community is engaged in harvesting food from its urban campus, diverting waste from the landfill and reducing food-shipping miles. 12,000 pounds of produce is diverted for use in ASU dining halls each year. More than 300 volunteers participated in Campus Harvest.

Green Waste Composting – ASU partners with a local farmer to divert an average of 12 tons of landscaping waste from the land fill each month. The waste is transported to the farm and composted. ASU purchases the compost for use at the Tempe campus arboretum in place of commercial fertilizers.

Recycling – Evaluating the current recycling and waste handling programs on each of the campuses to assess the efficacy in overall diversion. Transitioning two campuses from a source separate to adopt single stream commingle recycling. Rolling out special recycling on all campuses to address waste such as cell phones, e-waste, batteries, sneakers and toner cartridges. Working toward a goal of placing a recycling container next to every trashcan on every campus.

ACTIVE ENGAGEMENT

Sustainability Criteria – ASU is the first university to integrate sustainability criteria into its staff evaluation program. All employees are evaluated on their contribution to our sustainability efforts.

Pocket Guide – This publication was distributed to 80,000+ community members in the fall of 2008. The guide offers straightforward sustainability tips and list of resources.

PRINCIPLED PRACTICE

Online Sustainability Toolbox – Provides ASU departments with easy access to a comprehensive set of resources creating sustainability conscious workplaces and sponsoring zero waste events. For more details, go to <http://sustainability.asu.edu/practice/what-you-can-do/sustainability-toolbox.php>. This resource has been expanded to offer the Green Office, Green Labs and Green Events checklist and training program.

Green Purchasing Policies and Procedures – The purchasing department already uses these policies. They encompass issues of energy, water, toxins and pollutants, bio-based products, forest conservation, recycling, packaging, green building and landscaping. For more information, see <http://www.asu.edu/aad/manuals/pur/pur210.html>

Zero Waste Signage System – Designed and put in place for use on campus by ASU Sign Shop, mandate required for all buildings.

Forest Stewardship Council Certification – University Print Services achieved Forest Stewardship Council (FSA) certification and transitioned all business cards and stationery to 100 percent recycled content paper.

Engrained Restaurant – In 2008, ASU launched a unique campus dining experience developed by Aramark to provide the community with sustainable dining through a living-learning restaurant committed to locally grown food and environmentally friendly practices.

Product Review and Evaluation Teams – These teams are being established to meet a critical demand for handling the product and service offers introduced to the university through many channels. Current teams include energy and facilities operations. Additional teams will include transportation and student life. These groups are subsets of and in addition to the SPN teams.

- ASU Recycling Program – Already established, and current system can handle the volume of materials the university generates.
- Hazardous Materials – Managed by Environmental Health and Safety.
- ASU SunSET – An online office supply exchange site, allows departments to exchange, rather than discard, office supplies they no longer need.
- Surplus Property – Allows departments to shop for items that other departments no longer need rather than purchasing new.
- Green Waste Composting – Waste such as tree trimmings and grass cuttings are delivered to a local composter, who in turn provides compost to university ground crews for use on campus.
- Many of ASU's major suppliers provide sustainable solutions for ASU's requirements.
- LEED (Leadership in Energy and Environmental Design) Certification – All new university construction is now mandated to achieve a minimum of LEED Silver certification. ASU has completed 34 LEED certified buildings, including the first LEED Platinum certified building in Arizona.

Centralization of Computer Equipment – Physical computer equipment has been moved to a central location, removing the need for separate department facilities to house and maintain the equipment.

glossary

Available at <http://sustainabilityplan.asu.edu>

appendix a

Design Aspirations for a New American University
<http://newamericanuniversity.asu.edu/design-aspirations/>

appendix b

The challenges being addressed by the New American University
<http://www.asuchallenges.com/>

design aspirations for a New American University

The vision for the New American University includes these eight specific design imperatives:

Leverage Our Place – At ASU we leverage our place by allowing our environment to advance our research, by striving to design sustainable urban development and by learning from our communities. Local knowledge, local issues and local solutions inform student learning and shape faculty research.

Transform Society – At ASU we leverage knowledge, talent and resources for social change. Our research positively impacts society. And we encourage new models for higher education through our vision for a New American University.

Value Entrepreneurship – ASU inspires action. We harness knowledge for innovation and create purposeful ventures. We are entrepreneurial as individuals and as an institution.


Conduct Use-Inspired Research – ASU addresses the global challenges before us. Knowledge can inform decision-making and have positive societal impact while also considering the social implications of research.

Enable Student Success – ASU is focused on outcome-determined excellence. ASU students have broad knowledge and perspective, build their own communities and are provided with a clear path to graduation.

Fuse Intellectual Disciplines – At ASU we transcend boundaries. Our problem-oriented approach encourages dynamic intellectual interaction and enables students to learn from the world around them.

Be Socially Embedded – ASU strengthens communities by contributing to community dialogue and responding to communities' needs. We provide an education that's inclusive rather than exclusive. Our students engage in the world around them.

Engage Globally – ASU is scaling local solutions for global impact, fostering local and international student experiences, and building diverse partnerships. ASU is forging a new role for higher education in the world.



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About the ASU Global Institute of Sustainability

The Global Institute of Sustainability is the hub of Arizona State University's sustainability initiatives. The Institute advances research, education, and business practices for an urbanizing world. Its School of Sustainability, the first of its kind in the U.S., offers transdisciplinary degree programs focused on finding practical solutions to environmental, economic, and social challenges.

For more information, please visit:

<http://sustainabilityplan.asu.edu>

<http://sustainability.asu.edu>

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ARIZONA STATE UNIVERSITY

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