

Report of the
99TH ARIZONA TOWN HALL
“Arizona’s Energy Future”
Grand Canyon, Arizona
November 6 - 9, 2011

Introduction

Arizona is poised to emerge as a global leader in the new energy economy. As global energy consumption grows and petroleum products are depleted, political leaders look increasingly to more efficient, cleaner and sustainable energy technologies. Arizona is well-positioned to leverage this historical shift. From its plentiful sunshine, wide open landscapes, untapped geothermal potential and wind corridors to its research universities, Arizona derives comparative advantages from its human and natural resources that create a wealth of opportunity for its growing and dynamic energy sector.

Yet, while pushing forward as a next generation pioneer, Arizona still remains highly dependent on older and more traditional energy technologies, with all of the challenges and limitations that entails. Recurring air pollution over Arizona serves as a frequent reminder of the costs of the state’s heavy reliance on fossil fuels. As the home to the largest nuclear power plant in the United States, Arizona and its residents must wrestle with balancing reliable and affordable power generation with concerns about the safe mining and storage of nuclear fuels. Renewable energy is our future. At the same time, we must use existing electricity production facilities which have proven to be reliable, secure, and affordable for their remaining useful life while we transition to a broader and more sustainable energy portfolio that includes renewable energy.

With these questions and challenges in mind, a broad cross-section of Arizona residents from diverse backgrounds and communities met at the 99th Arizona Town Hall for three days of facilitated discussions to seek a consensus on Arizona’s Energy Future. This report captures the consensus that emerged from those discussions. Although not every Town Hall participant agrees with every conclusion and recommendation herein, this report reflects the overall consensus achieved by the 99th Arizona Town Hall.

Setting Energy Policy: Core Principles

A clear set of core principles should guide Arizona’s energy policy. At times, these principles may come into conflict, as with the potential tradeoff between lowering electricity costs and reducing pollution from electric plants. Energy policymakers must therefore plan

holistically, with proper respect for these competing principles. Energy policy must be long-term, protect future generations, and take into account the externalities that result from energy production, delivery and consumption. Arizona's current energy system is unsustainable. Climate change will be an important constraint on Arizona's energy future and must be appropriately factored into the state's energy planning and development.

Our energy policy should consider our arid environment and promote Arizona's economic competitiveness with a preference for: local, renewable, sustainable and distributed generation; reduction of energy imports; increases in renewable and sustainable utility-scale generation; and, continued increases in energy exports. Effective public-private partnerships are necessary. So is regional cooperation with neighboring states that trade with Arizona on the energy market.

We must balance energy safety, security, dependability, accessibility, affordability, environmental responsibility, and social equity. We must fairly allocate the costs and benefits of energy policies. An inclusive and participatory decision-making process should ensure that all stakeholders have a voice in the state's energy planning decisions. Educational efforts, including formal public education and outreach efforts, should arm consumers and stakeholders with a better understanding of the costs and benefits of different energy choices.

As a practical matter, Arizona will need to continue to rely on its existing physical plant and infrastructure for many years to come. Yet, we must also invest in emerging and recently commercialized technologies, and continue to develop more sustainable and less water-intensive energy solutions. These emerging technologies may require public incentives and promotion to "level the playing field" against longer-established technologies, as well as to compensate for the additional public value renewable technologies provide. At the same time, a stable political and regulatory environment is necessary to provide the certainty required to promote capital-intensive investment in new production capacity.

The state's energy policy should seek to minimize the harmful side effects of power generation and delivery, while promoting the responsible use of Arizona's natural resources. It should minimize any harmful side effects of power generation and delivery on behalf of all Arizona communities, especially our Native American and low-income communities, and our future generations. Energy efficiency and conservation are critical ingredients of a sustainable and affordable energy policy.

Promoting Energy Reliability, Security and Affordability

Arizona has been successful at developing energy that is reliable, secure, and affordable. These factors are keys to Arizona's economic strength and the public health and safety of its citizens.

Reliability

Arizona historically has provided some of its own energy resources, including coal, hydro-power and nuclear. The energy infrastructure in Arizona, however, is aging. Maintaining and upgrading Arizona's electrical generation and delivery infrastructure will be important for energy reliability in the 21st Century, as will diversifying energy sources,

decentralizing production, and reducing environmental impacts including the carbon content of energy sources. The state (e.g., utilities, entities, and appropriate organizations) must focus on more effectively meeting the energy needs of all citizens, especially its rural residents, vulnerable populations, and Native American communities. Against these needs, access to capital for long-term infrastructure investments will be increasingly difficult and will require cooperation between public and private entities, clarification of energy policy leading to increased regulatory certainty, and public participation.

Arizona's future energy demand will only increase. Without adequate planning, increased demand will affect energy reliability. To meet future demand, we must change current consumption habits by adding conservation and efficiency. Likewise, new technologies and a greater mix of sustainable energy sources, including renewable energy, will be important for ensuring a reliable energy future.

Security

Energy security is a multifaceted problem, including geopolitical security, energy extraction, and the safety of transporting energy resources. The 2003 Kinder-Morgan fuel pipeline shutdown, as well as other past energy disruptions in transportation, electric, and natural gas deliverability, demonstrates vulnerabilities in energy security and the need for oversight. Moving forward, Arizona should establish mechanisms that consider energy security improvements, including developing greater intrastate fuel-storage capacity, and more diversified and sustainable fuel sources.

Affordability

Affordable energy is critical for Arizona's economy and the public health and safety of its citizens. As such, Arizonans must continue to balance the need for reliable and secure energy that is also affordable and exhibits long-term price stability. These affordability concerns are especially acute for some of Arizona's vulnerable populations and Native American communities.

Energy affordability is a complex, changing problem that can have different effects on different segments of Arizona's population and economy. Consequently, energy affordability must be addressed as a long-term question – with long-term investments being appropriately financed to ensure long-term affordable energy. It is also important that energy policies consider the true costs of energy, including the externalities that are not currently captured in prices. Externalities are generally defined as evidence-based costs of the consequences of energy production.

Future decisions about meeting Arizona's energy needs will require innovation in balancing significant objectives, such as ensuring affordable energy and protecting the environment. As we move forward, we need to look into the value of incentives, a diverse energy portfolio, and consistent and comprehensive energy policies.

Setting Energy Policy: Who Will Lead?

Arizona's governing bodies, private industries, and other organizations have worked effectively in the past to serve Arizona's core energy principles. Uncertainties about Arizona's energy future and the lack of a cohesive statewide energy plan, however, demand significant improvement across all sectors. In particular, local, state, federal, and tribal authorities, industry, and universities need to coordinate long-term planning goals and collaborate on developing a statewide energy plan.

Arizona should create or identify a body with the responsibility and authority to implement comprehensive energy policy. Existing institutions, such as the Arizona Corporation Commission ("ACC") or Governor's Office on Energy Policy, or some yet-to-be determined public/private partnership may be appropriate for such a function. Staffing, funding, and competency should be considered for any potential energy authority. Arizona's comprehensive energy plan should include an energy development "best practices" model for all governing bodies across Arizona. The energy authority should assist in integrating local, regional, and national energy resources and needs and recommend policies that will provide regulatory consistency and save time and cost for industry and ratepayers.

At present, energy regulatory and approval bodies, such as the ACC, are not well structured to enable long-term energy planning. Nonetheless, these regulators need to implement near-term policy changes. For example, the ACC should change the factors it considers when setting energy rates to make those factors more responsive to changing economics and energy needs of Arizonans. The regulatory system should embrace Arizonans' core principles and set up a performance-based system that can help create long-term planning and decision-making. Moreover, the ACC should work with communities to increase community involvement and engagement in the development and approval of new energy projects. Projects should be facilitated more collaboratively beginning at the planning level to allow for more community participation.

Similarly, municipalities, counties, and other taxing and permitting authorities need a better understanding about the burdens they place on energy industries and consumers. Those burdens are passed along to customers in the form of higher prices.

Promoting Energy Safety and Reliability

The reliability and security of Arizona's energy sector vary between different resources, facilities, technologies and geographic areas. Electricity generation and delivery appear generally secure and reliable in Arizona, with sufficient redundancies to minimize risks of widespread outages from equipment failures or sabotage. Risks to the delivery network, typically resulting from events such as wildfires and windstorms, are largely localized. This is less true, however, in some rural areas of the state, where limited infrastructure redundancies raise higher risks of power outages.

Energy security and water security are intertwined in Arizona, because water availability is dependent on power. Similarly, electrical generation is typically dependent on water.

Although Arizona produces some coal, it also relies on coal imports from other states for coal-fired electricity production. Coal mining facilities in Arizona are located entirely on sovereign Native American reservation lands, leading to a complexity of overlapping tribal and federal agency jurisdictions that can pose regulatory risks for future coal production.

The numerous natural gas-powered electric generation plants in Arizona rely entirely on pipeline supplies of natural gas from outside of Arizona. Similarly, Arizona imports all of its gasoline, relying on a single, aging Kinder-Morgan pipeline that delivers liquid fuels to the state. The vulnerability of this delivery system was demonstrated by the 2003 rupture in Tucson that resulted in environmental damage near the rupture site and gasoline shortages in Phoenix filling stations.

Arizona is also home to the nation's largest nuclear power plant, the Palo Verde Nuclear Generating Station near Phoenix. Catastrophic accidents at nuclear power plants, although rare, can be devastating. Arizona should continue to conduct open discussions of the safety of Palo Verde, especially in the wake of the recent nuclear power plant accident at Fukushima, Japan, and work with the appropriate federal agencies to safeguard this facility and its nuclear fuel.

Initiatives to reduce risks to Arizona's energy reliability and security should include:

- Encouraging more distributed energy production, such as rooftop solar collectors;
- Expanding the diversification of transportation fuels;
- Promoting development of more public transportation options;
- Increasing funding for research and implementation of energy storage;
- Developing storage facilities for natural gas and other fuels;
- Conducting a thorough hazard assessment and mitigation plan for all energy facilities within the state; and
- Building adequate electric transmission and delivery system redundancies in rural areas.

Capturing the True Costs of Energy

Energy consumers do not understand the true costs of energy and are not given the proper price signals to be aware of the true costs. The true energy costs include built-in subsidies given for energy development, the costs to an arid state of water-intensive energy production technologies, impacts to the environment, restoration of disturbed lands and ecosystems, impacts to human health, and human costs of foreign wars. Land use policy decisions also impact both the ability to provide energy to rural areas and low-income communities, and the energy use associated with transportation. Energy prices in Arizona do not incorporate the true costs due to social policy, taxes, environmental, and other externalities. An energy life-cycle analysis is necessary for existing and potential energy options to incorporate externalities and incentives into energy pricing.

Public policy should impact energy pricing by analyzing long-term planning, investment, and education to the public, such as increasing public awareness of the true

energy costs. Public policies can also influence energy conservation by incorporating differential rates on different energy resources, or time of use, and adopting progressive rate structures based on amounts of energy use. Current electricity pricing methods, however, make it difficult for utility companies to recover their investments aimed at promoting energy conservation and efficiency. One possible solution is “decoupling” (separating fixed infrastructure costs from consumption pricing), to allow investor-owned utilities to incorporate their investments in energy efficiency technologies into the rates they charge. This and other approaches that stabilize utility revenues while supporting investments in energy efficiency and renewable sources should be considered.

Energy and the Arizona Economy

Energy powers the Arizona economy. For better or worse, changes to the energy sector can have significant impacts on the state’s economic health. Policymakers and private enterprise should optimize the use of Arizona’s competitive advantages in the energy industries to enhance the state’s economy.

Energy costs have economic ripple effects. Rising gas prices lead to increased food costs for consumers. Higher prices for electricity drive up production costs for energy-intensive industries. Many key Arizona industries, such as copper mining, dairy and tourism, are highly energy dependent.

Energy sector industries also provide a source of employment and tax income. Many traditional electric generation technologies, however, rely heavily on large amounts of water, which reduces the availability of water for other economic, cultural, and environmental uses.

Public policy decisions substantially affect the state’s energy sector. Urban sprawl leads to higher gasoline consumption and resulting higher carbon emissions. Tax incentive programs, such as tax benefits for residential solar power investments, affect consumer behavior. While regulatory certainty can encourage investments, regulatory burdens and bureaucratic red tape can slow or otherwise impede the development of new investments in the energy sector; one solution to this problem is to standardize the permitting process.

Developing Arizona’s Energy Economy

Arizona has tremendous opportunities to develop its energy economy. Based on the state’s plentiful sunshine, Arizona should be a leader in solar energy generation and the development of related technologies. Affordable energy production, promotion of renewable energy, and the location of manufacturing facilities and energy-related corporate headquarters in Arizona are critical drivers for statewide economic development and job creation. Favorable public policy, improvements in education to attract business investment and relocation, incentives, subsidies, and tax advantages are necessary to maximize the economic benefits from the development of Arizona’s energy sector.

Investing in Arizona’s energy opportunities can have a multiplier effect for economic development. These opportunities include: the use of solar, biomass, and other sources to generate new transportation fuels (for use in Arizona and for export); developing utility-scale renewable electric generation; expansion of distributed generation; manufacturing of solar

panels coupled with increased affordability; use of compressed natural gas (CNG), liquefied natural gas (LNG), and electric vehicles for transportation; diversification of renewable sources including geothermal; increased tax revenues; and, discovering home-grown innovation and talent. In addition to developing new energy sources, we should continue to focus on better uses of existing sources through conservation and efficiency, such as by the increased use of smart grids and smart meters, which enable better controls and communication by users.

Arizona should promote public-private partnerships to develop new and emerging energy technologies. Policymakers should also consider, and where appropriate adopt, tax policy and other incentives to promote desired outcomes such as energy conservation and investments in renewable energy. They should also reduce regulatory impediments to the development and implementation of new and more sustainable energy technologies.

Arizona's educational system is essential to developing the state's energy opportunities. Greater levels of research and education, including applied research and training by Arizona universities, colleges, and institutes, will be required. In addition, Arizona should improve technology transfer rules to better take advantage of economic opportunities. K-12 schools, vocational/technical schools, community colleges and universities will need to train a competitive workforce.

Public support is critical to achieving the level of investment necessary to capitalize on Arizona's full energy potential. Education efforts should aim to promote a better public understanding of the costs, benefits, and impacts on energy consumption and conservation, as well as the opportunities presented by increased investment in the energy industry. Better education and outreach efforts will help to generate enthusiasm for Arizona's energy sector development.

Promoting Energy Sustainability: Energy and the Environment

The production, delivery, and use of energy, regardless of the source, impact the environment. As part of developing a statewide strategic energy plan, Arizona's leaders must address these environmental challenges through a balanced and integrative approach. They must demonstrate real leadership that reflects Arizonans' values of protecting our environmental resources while investing in technologies and development that allow us to move towards greater energy independence. Environmental factors that Arizona's energy leaders need to consider include:

- Guiding principles that are good for the environment and that incorporate energy reliability, security, and affordability;
- Population growth, per capita consumption, and demographics;
- Impacts on future generations, lower-income populations, and other populations that lack strong advocacy;
- Native American community plans for energy development;
- Development of mechanisms to encourage investments in energy systems that account for both short-term and long-term costs and benefits;

- Cultivating more creative thinking rather than limiting the options to market participants;
- Vulnerability of Arizona’s communities and water supply to climatic variability and potential warming;
- Unique environmental challenges posed by heavy reliance on automobile transportation and limited public transportation options;
- Re-evaluating environmental laws and regulations that restrict development and implementation of sustainable energy projects;
- Careful evaluation of proposed energy projects and their environmental impacts during early planning phases;
- Assessing land-use tradeoffs when considering new energy projects;
- Stimulating public education and positively affecting cultural perceptions about energy; and

Arizona also needs to evaluate changes to its energy infrastructure. The challenge is to make careful, incremental changes to that infrastructure over the coming decades to accomplish a transition to a sustainable energy future. But as regional and global conditions and imperatives change, we must be ready to act more quickly if need be. We also must invest heavily to develop a diversified energy portfolio that reduces environmental harms from the production and use of energy. As part of this evaluation, Arizona should not rule out expanding nuclear power generation as a replacement for carbon-emitting fossil fuel power plants, provided that cost and other considerations are fully evaluated.

Balanced and participatory public education, engagement, and consensus building are essential to effectively address these environmental challenges. The scientific and academic communities, policy makers, and industry all have a responsibility as part of this process to spur new research, drive innovation, develop new technologies, strengthen existing technologies, promote conservation, and encourage environmentally sound investment.

Promoting Energy Efficiency

Energy efficiency plays an important role in helping Arizona to satisfy its energy needs. The Arizona Corporation Commission is requiring that state-regulated electric utilities reach 22 percent cumulative renewable energy savings by 2020. Encouraging further energy efficiency is critical for Arizona; it reduces demand for energy immediately, is cost-effective, has a positive impact on the environment, and stimulates job growth.

One of the greatest challenges with energy efficiency is a lack of general understanding about its full range of benefits. Consumers often have short expectations for recovering energy efficiency expenditures and do not consider the energy life-cycle and externalities of energy production and use. To alter this course, Arizona needs to educate the public and change consumer behavior towards greater energy efficiency.

Both government and the private sector need to play a role in promoting energy efficiency and changing individual consumption habits. While policy changes are necessary, we should focus more on individual responsibility than government mandates. Governmental policies should not be imposed in a manner that stifles or hinders private innovation. Instead,

government should approach energy efficiency as a partner, and adopt holistic energy policies in collaboration with industry.

Comprehensive energy efficiency policies must consider:

- Uniform building and appliance efficiency standards on local, county, and state levels allowing municipalities to establish higher standards;
- Encouraging home energy efficiency upgrades and conservation;
- Developing model energy disclosure ordinances;
- Providing up-front capital and financing programs, such as PACE, for homeowners to improve residential energy efficiency;
- Providing financial incentives for homes and businesses that implement energy efficiency measures;
- Providing financial incentives for research and development of energy efficiency technologies;
- Developing programs to help low income and vulnerable populations adopt energy efficiency measures;
- Promoting efficiency-related industries (such as ground-source heat pumps) and job training;
- Developing incentives for use of alternative, more energy efficient forms of transportation;
- The advantages and disadvantages of decoupling utility revenue from consumption and allowing cost recovery for efficiency and conservation investments by electric utilities;
- Retrofitting existing structures to increase energy efficiency can be more expensive than new construction; and
- Renewable energy zones for utility-scale solar facilities on lands with high resource value that are proximate to power lines. Such zones would be incentivized by a level of environmental preclearances to reduce development costs and timelines and help guide development away from the most environmentally sensitive lands.

The Role of Renewable Energy Sources

We should increase our reliance on renewable energy. Sustainable and renewable energy technologies should play a predominant role in meeting Arizona's growing energy demand. These sources should be deployed to the greatest extent possible, with a goal to diversify the state's energy portfolio. At the same time, consumers must continue to focus on efficiency and energy conservation.

The Arizona Corporation Commission is requiring that state-regulated electric utilities produce 15% of their generated electricity from renewable sources by 2025. Arizona leaders should monitor progress toward this goal and continue to consider whether it strikes the appropriate balance, or should be increased. Current assessments of renewable energy development suggest an increase to stimulate greater economic, social, and environmental

sustainability. Especially in the near term, the increase will allow Arizona to capture more of the Federal Investment Tax Credit, set to expire in 2016

Public and private utilities are successfully building new utility-scale sources of renewable energy generation, while also encouraging customers to invest in distributed renewable generation such as rooftop solar systems. New funding options, including leasing, present opportunities to make distributed generation affordable to consumers. While distributed solar energy has shown the most success and is rapidly becoming more affordable, opportunities also exist for other renewable sources, including utility-scale solar, wind, geothermal, biomass, and other emerging technologies.

In addition to residential consumers, the public sector and businesses play an important role in adopting distributed generation. Businesses, hospitals, schools, and rural communities should consider installing distributed generation facilities. Incentives should encourage this adoption.

Challenges to increasing the use of renewable energy include reliability and intermittent delivery (for some sources). Energy storage presents an opportunity to solve these challenges. These challenges in some cases will require back-up generation sources based on more traditional energy technologies. Emerging and new energy technologies also face political, cultural, social and technical, obstacles, and, often, an initial period of higher costs and prices compared to older, established technologies. In some markets, solar and wind are now cost-competitive and are seeing continuing price declines.

Red tape and regulatory hurdles also present challenges. These challenges can be especially acute for facilities, such as transmission lines, that span across numerous jurisdictions. Reform of regulated utility pricing rules may be required to incentivize larger utilities to invest in programs that reduce energy demand, such as by increasing efficiency or conservation. Government and industry also must invest in new infrastructure to facilitate more widespread use of innovative technologies, such as smart grid and smart meter systems. They should also consider allowing customers with distributed generation technologies to sell excess generation back to electric utilities.

The Role of Energy Innovation

Energy innovation and emerging technologies play an important role in meeting Arizona's future energy needs and in serving as a source of economic development. Arizona's research institutions, the private sector, and policymakers need to collaborate to further develop these advancements. The Science Foundation Arizona is a successful example of such collaboration. Arizona should be a driver for encouraging innovation from research, to development, on through to commercialization.

Arizona needs to bolster its ability to attract out-of-state investment in energy innovation and emerging technologies. As part of this effort, we must improve the education system from K-12 through higher education, with a focus on interdisciplinary science, technology, engineering and math. Arizona also must improve work-force development and trade programs, veteran placement, and vocational training.

Arizona also needs to confront other challenges to its ability to innovate and develop new technology. These challenges include, but are not limited to, obtaining funding, utilizing federal incentives, technology-transfer limitations, water availability, transportation infrastructure limitations, delivery infrastructure limitations, energy storage limitations, and land-use conflicts. To help address these challenges, Arizona should look to examples of other states that have successfully facilitated energy innovation and technology development, such as New Jersey, Utah, and Washington.

Establishing a Strategic Energy Plan

Arizona must develop a long-term, comprehensive energy plan that seeks to create a diverse, sustainable portfolio of energy generation with as close to zero carbon emissions as feasible (by mid-century). Sustainability should encompass economic, commercial, and environmental considerations. The plan should define the state's goals for meeting its needs for energy and transportation fuels, and position Arizona as an incubator of innovation and a leader in new energy technologies and conservation. It should include specific goals with measurable outcomes and benchmarks to track progress, including targets and timetables for the adoption of renewable and sustainable energy sources. To date, Arizona electric utilities have generally developed affordable, secure, and dependable energy sources. In contrast, Arizona's sources of transportation fuels are more vulnerable to interruption and rapid price changes. Priority should be given in the plan to providing more security, dependability, and affordability for transportation fuels and natural gas supplies.

Key elements of the plan should include:

General Principles

- Ensuring reliable, sustainable, affordable and accessible energy for all Arizonans, including rural communities and vulnerable populations, while maximizing the benefits of existing energy facilities;
- Stability, affordability, and long-term rate structures that will reduce risk, thereby helping to attract companies to Arizona and spurring investment for companies already here;
- Reliance on sustainable/renewable energy for generation capacity and distributed generation whenever possible;
- Diversifying our energy portfolio, including emerging technologies as well as existing sources;
- Measures to ensure that all stakeholders and relevant communities have meaningful input in energy planning and development decisions;
- Just and reasonable rates;
- Aligning and reconciling applicable local, state, tribal, and federal regulations, to reduce burdens on industry;
- Taking into account the economic impacts and needs of tribal and rural communities;

Education, Research, and Support of Emerging Technologies

- Educating policymakers and business leaders on energy issues and emerging technologies;
- Emphasizing education to teach consumers, business leaders, and policymakers the true costs of energy, so that they can make wiser energy choices and consider the energy impacts of household, business, and policy decisions;
- Sharing energy best practices among utilities, communities, government agencies, research institutions, businesses, organizations, and tribes;
- Leveling the playing field for new and emerging technologies that may not share the built-in subsidies and incumbent advantages of more established energy technologies;
- Capitalizing on and furthering energy innovations developed by Arizona research universities and other entities;
- Incentivizing research institutions and innovations for commercializing new technology.
- Encouraging the development of community projects that promote renewable energy creation;
- Enabling localities and others to experiment with community-scale solar projects;
- Developing a competitive workforce for the new energy economy;

Transportation

- Transportation planning, including increased availability and use of more energy efficient public transportation between and within cities, efforts to reduce commuting distances and encourage telecommuting, and promotion of alternative transportation fuels;
- Developing alternative transportation infrastructure such as clean-burning fueling stations;
- Incentivizing the conversion of vehicle fleets to alternative fuels;

Energy Efficiency

- Understanding the significant and immediate benefits of energy efficiency, adopting statewide promotion of increased energy efficiency programs;
- Consistent with Arizona's home rule laws, establishing uniform energy efficiency standards for land use and building codes;
- Establishing uniform statewide energy efficiency standards for appliances;

Financing, Investments, and Incentives

- Consideration of innovative financial mechanisms, including business and personal investment options, rebates, tax, and financial incentives, or decoupling that will spur public and private investment in energy efficiency and conservation;
- Investments in new infrastructure to increase reliability and efficiency and capitalize on new and emerging energy technologies, such as smart-grid technologies;
- Provide financing mechanisms and innovations such as feed-in-tariffs and production-based tax incentives of renewable energy built in Arizona;
- Consider mechanisms that incentivize the adoption of renewable energy technology manufactured or generated in Arizona;

Environmental and Water Issues

- Environmental protections;
- Reducing the amount of water used for energy generation in both the electric and transportation sectors;
- Recognizing the unique role of water in Arizona as a finite resource;
- Minimizing carbon emissions.

Implementing the Strategic Plan

Developing a long-term, comprehensive energy plan is the initial step for achieving the strategic vision for Arizona's energy future. Such a plan will require key state leaders to agree on the necessary actions to implement the plan. Currently, no single organization has sufficient authority to implement or coordinate statewide energy policy. Arizona may need to grant additional resources to the Governor's Office of Energy Policy, the Arizona Corporation Commission, or some other entity to fill this role.

Investment for implementing Arizona's energy plan will need to come from a variety of sources. Funding for major, ongoing technical research will have to come from the federal government. However, if our state is committed to this task, we must be creative and find new revenue sources, perhaps in the form of surcharges or energy-use taxes. Arizona needs to explore methods to encourage private capital investments, such as foundations, energy mutual funds, bonds, public/private partnerships, or other new equity sources. We should research and adopt the best policies from other states and countries that currently receive greater private investment in renewable energy (such as California, Colorado, and New Jersey).

Funding for implementing the plan must be broadly supported by energy consumers and state and federal taxpayers so that no single community is excessively burdened. As part of this process, an additional priority is to renew or augment university funding as soon as possible to further research into renewable energy and energy efficiency technologies.

Where practical, money that would otherwise be spent on the upgrade or replacement of existing unsustainable energy sources should be directed toward renewable sources. If existing unsustainable energy sources are replaced in whole or in part with alternative sources, efforts should be made to support communities negatively impacted by the shift to new energy resources. Moreover, renewable energy mandates should be considered an eventual component for new development and replacement of other energy sources.

As the plan is implemented, utility rate structures should be re-evaluated to motivate consumers to fulfill Arizona's energy goals. Decoupling energy rates and rate increases should be considered to ensure utilities are financially stable and able to invest in renewable energy and energy efficiency programs. The plan should develop a nexus between the benefits people receive (such as cleaner air, better health) and the costs they pay to support renewable energy and energy efficiency programs. Incentives should be performance-based to achieve desired results and should not be limited to any one particular technology. Additionally, the plan should evaluate streamlining processes for developing new renewable energy sources.

The plan must also consider transportation fuels. Funding for goals related to transportation fuels may be easier, because implementing the transportation goals can be beneficial for consumers, especially in light of increasing petroleum-based fuel costs. And, while Arizona cannot directly control automobile manufacturers, it can create local incentives, such as encouraging use of public transportation, use of bicycles, more fuel-efficient vehicles, and telecommuting.

Moving Forward: Roles and Responsibilities

Arizona's energy future is now. We are at a critical point in time, with an extraordinary opportunity in regards to energy development, use, policy, economic development, job creation, and cultural change – and we must take action. Accountability and leadership are critical; otherwise, nothing will be accomplished. The long-term, comprehensive energy plan must have clear benchmarks that permit accountability and allow for measurable progress.

Consumers need to learn where their energy comes from, understand the implications of their energy decisions, and make informed choices. Individuals are in the best position to educate businesses and governments about our values and current and future developments in energy and energy technologies. Thus, it is our individual responsibility to monitor our own actions and hold businesses and governments accountable for reflecting our values.

Once the plan is developed, the multiple stakeholders need to return to their constituencies to further educate them on the elements of the plan. We also need to involve new constituencies, like the youth and other participants who have not traditionally been involved in energy decisions, and make them part of the solution. Stakeholders also need to work to encourage changes of both perceptions and actions.

Collaboration is essential; none of us has all the resources to change and implement Arizona's energy future alone. Moreover, based on how Arizona's land base is owned and

managed (42 percent of Arizona is managed by federal agencies; 23 percent of Arizona is tribal land), federal agencies, federal-state and broader partnerships such as the Western Regional Air Partnership, and sovereign Indian nations must be part of the collaboration.

Finally, businesses, governments, non-profit organizations, and individuals should read, understand, improve, and adopt the recommendations set forth in the 99th Arizona Town Hall Report.