2023 Pinal County

Major Comprehensive Plan Amendments

(County Initiated Item Only)

PZ-PA-006-23

Renewable

Energy

Sources

Pinal County
135 North Pinal Street,
Administrative Complex
Florence, AZ 85132

www.pinalcountyaz.gov

Board of Supervisors

(Work Session)

(06/21/2023 @ 9:30 AM)

PINAL COUNTY

PZ-PA-006-23

1.1 COMPREHENSIVE PLAN AMENDMENT APPLICATION NARRATIVE

1.1.1 Introduction

The Pinal County Comprehensive Plan under Chapter 7, Environmental Stewardship, subsection Energy Element, under Renewable Energy Sources currently includes only solar energy as a renewable source.

This application for Comprehensive Plan amendment proposes to include other renewable energy sources besides Solar like Bioenergy, Geothermal, Hydrogen, Hydropower and Wind Energy. With the increase in research and improvements in technology, along with incentives from federal and state government, there has been increase in project proposals under renewable energy. This amendment would help Pinal county process proposals under the renewable energy sources besides Solar.

In addition to the above, Pinal County proposes to update the Appendix D: Glossary to include additional terms included in the Chapter 7 of the Comprehensive plan document.

1.1.2 Importance of the Comprehensive Plan Amendment

The proposed Major Comprehensive Plan Amendment represents:

- A step towards expanding other renewable energy sources, besides Solar through Land-use planning under Chapter 7, Environmental Stewardship, subsection Energy Element - Renewable Energy Sources
- An opportunity to bring up-to-date the renewable energy Goals, Objectives, and Policies.
- Update Appendix D: Glossary to include additional terms in the vocabulary of the Comprehensive Plan document.

1.1.3 Proposed Updates

(Changes are shown in green on Pg. 284, 285, 286, 287, 288 and Appendix D: Glossary)

Leo Lew
County Manager

PINAL COUNTY
WIDE OPEN OPPORTUNITY

PROCEDURE AND APPLICATION FOR A PROPOSED NON-MAJOR COMPREHENSIVE PLAN AMENDMENT

A. Attend a Concept Review (Zoning pre-application (Z-PA)) meeting with the Planning Department and affected County agencies.

B. File an application and all required supporting documentation for a Comprehensive Plan Amendment. Please use the attached application forms.

C. Public hearing before the Planning Commission with Commission recommendation to the Board of Supervisors. Time frame is approximately 10 to 15 weeks from application acceptance by the Planning Department.

D. Public hearing, (approximately 4 to 8 weeks after Planning Commission hearing), before the Board of Supervisors.

PROCEDURE FOR A PROPOSED MAJOR COMPREHENSIVE PLAN AMENDMENT

A. Attend a Concept Review (Zoning Pre-Application (Z-PA)) meeting with the Planning Department and affected County agencies.

B. File an application and all required supporting documentation for a Comprehensive Plan Amendment. Please use the attached application forms.

C. Public meeting with the Citizens Advisory Committee.

D. Public hearing before the Planning Commission with Commission recommendation to the Board of Supervisors.

E. Public hearing before the Board of Supervisors.

*Public hearing schedule will be made available in June.

FEE SCHEDULE FOR MAJOR AND NON-MAJOR AMENDMENTS

A. Major Comprehensive Plan Amendment: $5,091.00

B. Non-major Comprehensive Plan Amendment:

   a. 0-499 mailouts: $4,478.00
   b. 500 or more mailouts: $4,824.00
   c. With accompanying zone change: $3,354.00

COMMUNITY DEVELOPMENT
Planning Division

85 N. Florence St., PO Box 2973, Florence, AZ 85132 T 520-866-6442 FREE 888-431-1311 F 520-866-6530
www.pinalcountyaz.gov

Leo Lew
County Manager

PINAL COUNTY
WIDE OPEN OPPORTUNITY

APPLICATION FOR A COMPREHENSIVE PLAN AMENDMENT IN AN UNINCORPORATED AREA OF PINAL COUNTY, ARIZONA
(All Applications Must Be Typed or Written in Ink)

Comprehensive Plan Amendment unincorporated & Property Information:
(Feel free to include answers and to these questions in a Supplementary Narrative, when doing so write see narrative on the space provided)

1. The legal description of the property: County -Wide

2. Parcel Number(s): County-wide Total Acreage: _____

3. Current Land Use Designation: N/A

4. Requested Land Use Designation: Update Chapter 7- Sub Section Energy - Renewable Energy Sources

5. Date of Concept Review: 5/23/2023 Concept Review Number: Z-PA-060-23

6. Why is this Comprehensive Plan Amendment being requested? (You must provide a summary of the anticipated development on this page, if not provided, the application cannot be processed.):
Update Chapter 7 Environmental Stewardship- Energy Element, Section Renewable Energy Sources to include other renewable energy sources besides Solar. Proposed multiple renewable energy sources besides Solar are Geothermal, Wind Energy, Bioenergy and Small hydro. Pinal County would like to propose a diverse renewable energy mix options for future energy demands that might arise.

7. Discuss any recent changes in the area that would support yourapplication.
Multiple potential customers who have expressed interest in renewable sources other than Solar have been turned down from Pinal County as the Comprehensive plan does not address Geothermal, Wind, Bioenergy or Small Hydro projects.

8. Explain why the proposed amendment is needed and necessary at thistime.
Pinal County is not equipped to currently process renewable energy applications besides Solar as the Comprehensive plan does not address other renewable sources.

INV#:_____ AMT:_____ DATE:_____ CASE:_____ Xref:_____

PINAL COUNTY COMPREHENSIVE PLAN AMENDMENT APPLICATION

IN ADDITION TO THIS APPLICATION, YOU WILL NEED TO SUBMIT:

- ❑ A. **Certified Boundary Survey**, including legal descriptions of the proposed designations
- ❑ B. Location map which identifies the property and its relationship to Pinal County environs.
- ❑ C. Map showing the topography of the property.
- ❑ D. Site map which specifically identifies the property including parcels under separate ownership.
- ❑ E. Property owner(s) authorization for the Comprehensive Plan Amendment.
- ❑ F. Other information as may be determined necessary by the Planning staff or other information the applicant feels is pertinent to this request.
- ❑ G. Non-refundable filing fee as shown on the cover page.
- ❑ H. Narrative in PDF format.
- ❑ I. Neighborhood meeting report

Your application must be submitted digitally via the online submittal portal site at https://citizenaccess.pinalcountyaz.gov/CitizenAccess/Default.aspx

Please call or email the Planning Division for more information.

I certify the information included in this application is accurate, to the best of my knowledge. I have read the application and I have included the information, as requested. I understand if the information submitted is incomplete, this application cannot be processed.

Pinal County		520 866 6642
Name of Landowner (Applicant)	Address	Phone Number

N/A

Signature of Landowner (Applicant) — E-Mail Address

Brent Billingsley		520 866 6642
Name of Agent	Address	Phone Number

brent.billingsley@pinal.gov

Signature of Agent — E-Mail Address

The Agent has the authority to act on behalf of the landowner. The Agent will be the contact person for Planning staff and must be present at all hearings. Please use the attached Agency Authorization form, if applicable

Chapter 7: Environmental Stewardship

Energy

Introduction

Pinal County has a tremendous opportunity to be a leader in sustainability through prudent energy management. Unlike many areas of the country where the majority of the built environment is decades old, by 2020, a vast majority of Pinal County's built environment will have been constructed after the Millennium. Using energy efficient materials and planning techniques is much easier and cost effective for new construction than trying to retrofit older structures.

The planning and siting of infrastructure is much better done now than after development has occurred. For these reasons and others, it is the right time and place for a comprehensive energy approach to be created and implemented.

Purpose The Pinal County Energy element is an important component of the Plan. By developing a comprehensive energy strategy now, the County can be prepared to shape more sustainable growth.

Relationship to Pinal County's Vision Several components of the Pinal County Vision are directly impacted by energy.

> *Environmental Stewardship* How energy is generated and distributed in the County and the success level of conservation efforts will directly impact the regional environment. Air quality, water usage, and protection of sensitive areas and viewsheds (siting facilities to minimize impact on key visual resources) will need to be addressed.

Economic Sustainability Without ample and reliable energy, Pinal County will not be competitive in attracting business and industry which will bring new jobs. In addition, energy costs have a direct impact on the cost of living and doing business.

Open Spaces and Places Generation and transmission facilities have to be located somewhere. There is a tendency of the public to not want facilities close to population centers. However, the County's open spaces are also cherished. How and where facilities are sited will need to be carefully planned.

Strategic Areas

The Energy element contains three strategic areas. The first two, Conservation and Renewable Energy Sources, satisfy the state of Arizona's Growing Smarter requirements that state an Energy element should include:

- A component that identifies policies that encourage and provide incentives for efficient use of energy.
- An assessment that identifies policies and practices that provide for greater uses of renewable energy sources.

The third strategic area addresses Energy Generation and Transmission. Conservation and the development of renewable energy sources will be effective in ensuring that the County's energy future moves toward sustainability but anticipated growth will certainly require an exponential growth in the generation and distribution of energy for the coming decades.

It should be noted that the Arizona Corporation Commission (ACC) is responsible for final decisions about facility siting. However, Pinal

County needs to be active in providing input to ensure compatibility with the County's Vision and goals.

The focus of the Generation and Distribution Strategic Area of the Energy element is to:

- Illustrate the potential needs for generation and transmission infrastructure as the County grows.
- Inform residents and stakeholders of the present plans to locate future facilities throughout the County and the fact that everyone will need to share the burden of having safe, reliable, and clean energy throughout the County.
- Outline goals and policies to ensure that the County, municipal governments, and energy providers maintain a cooperative working relationship to facilitate appropriate locations for facilities while protecting Pinal County's physical environment and natural resources.

Conservation

Pinal County will work with residents, other agencies, and the business community to expand energy conservation efforts. The County can have the most impact on conservation efforts through influencing construction methods and materials, site planning and community design, and education.

The importance of energy conservation cannot be overstated. It is not just the right thing to do, it has tremendous environmental, natural resource, and economic implications. To illustrate the sweeping impacts of the benefits of electrical energy conservation, an actual case study can be analyzed.

The recently completed *Central Arizona Transmission System 2016 Transmission Study* estimates a need for 10,000 more megawatts of

power to serve Pinal County. To put this in perspective, the Hoover Dam has a maximum capacity of 2,080 megawatts.

A natural gas fired plant that will generate 575 megawatts of electricity is proposed in Coolidge at a cost of $500 million. Based on the 10,000 megawatt need, 18 new power plants of this type would be needed to generate the estimated additional electricity needs. A decrease in demand through conservation efforts of 11 percent would eliminate the need for two of these plants at a savings of $1 billion to ratepayers. In addition, the fuel and water saved in not operating those two facilities would have significant positive environmental and natural resource implications. Finally, less land would be required for generation and fewer transmission corridors could be a result. A conservation level of 11% is an attainable goal.

As energy prices continue to rise, electricity, natural gas, and transportation costs take a larger piece of household and business budgets. The economic viability of energy efficient construction will increase due to this as will the need to find alternative transportation modes and a reduction in travel needs.

Renewable Energy Sources

Pinal County will provide support for the development and location of renewable sources to meet current and future needs and to lessen the regions dependence on non-renewable energy sources. These might be stand alone facilities or co-located with other energy providers.

Renewable Energy sources, such as biomass, geothermal resources, sunlight, water and wind are natural resources that can be converted into the following types of clean energy:

- Solar Energy
- Bioenergy
- Geothermal Energy
- Hydrogen
- Hydropower
- Wind Energy

The expansion of renewable energy opportunities should be supported by the County through its land use planning and permitting processes. One ~~very exciting viable~~ of the most commonly used renewable energy sources in Arizona is **solar energy**. The two main types of solar energy technologies are Photovoltaics (PV) and concentrating solar thermal power (CSP).

With Federal and State grants, multiple solar farms have been approved by the County using the Photovoltaic technology. ~~Historically, the economics of solar power have been for smaller, individual property generation units and this solution should continue to be encouraged by the County.~~

Advances have now made it possible for entire households or buildings to significantly reduce their traditional energy dependence and at times may be able to generate enough power to make the meter run backwards. Unfortunately, the majority of homeowners and businesses do not have the financial resources to install such infrastructure. Federal and state grants have provided support but there is still a significant cost for installation. As energy costs continue to rise and technological advancements occur, this option will become more feasible and attractive to individual property owners. Pinal County must be ready for this. Through its regulatory and taxation policies, the County can provide additional support.

There are major changes on the near horizon regarding large scale solar energy generation. There are two major reasons for this trend: technology has started to make large scale generation more financially feasible and government/regulatory agencies are requiring energy producers to diversify their energy portfolios and have set targets for renewable energy sources.

~~A planned solar power plant near Gila Bend will serve approximately 75,000 homes upon completion. While this plant will be a breakthrough for Arizona, the energy generated from it will be much more costly than current sources and will be subsidized by ratepayers. However, as~~ Non-renewable energy sources continue to become more expensive and as technology improves, the gap between traditional and solar power should begin to close. Another challenge to large scale solar generation is space and location. ~~The planned Gila Bend facility will require up to three square miles of land for its solar fields and power plant.~~

Solar energy technology doesn't end with electricity generation by PV of CSP systems. These solar energy systems must be integrated into homes, businesses, and existing electrical grids with varying mixtures of traditional and other renewable energy sources.

Concentrating solar-thermal power (CSP) systems use mirrors to reflect and concentrate sunlight into receivers that collect solar energy and convert it to heat, which can then be used to produce electricity or stored for later use.

Pinal County residents have also expressed a strong desire for expanded post-secondary education and training opportunities. The emerging renewable energy market could provide the catalyst for college, university and technical training programs for the design, installation, and maintenance of renewable energy equipment and infrastructure.

In addition to Solar energy discussed above, the following are types of renewable energy Pinal County would like to support through land-use planning concepts.

Bioenergy is one of the many diverse resources available to meet energy demands for Pinal County. It is a form of renewable energy that is derived from living organic materials known as biomass which can be used to produce transportation fuels, heat, electricity and other products. Biomass includes crop waste, urban construction material waste, food waste, forest thinning, purpose-grown grasses, woody energy crops and microalgae.

Geothermal energy is heat energy harnessed from the earth's interior. Geothermal resources are reservoirs of hot water and heat that exist or are human made at varying temperatures and depth below Earth's surface. Heat flow from earth is brought up to the surface in the form of hot ground water and steam. Geothermal heat pumps circulates water through pipes buried in the ground, or submerged in a water body, to heat and cool a building's HVAC system.

Hydrogen is another clean energy carrier produced from diverse domestic sources (natural gas, solar, wind, geothermal, biomass, fossil fuels, electricity) or produced from different processes (electrolysis, biological, water splitting, steam methane reforming) Hydrogen can be used in fuel cells to generate electricity or power and heat.

Hydropower or hydroelectric power is one of the oldest and largest sources of renewable energy that uses the natural flow of moving water to generate electricity. While most people associate the energy source with the Hoover Dam, a huge facility harnessing the power of an entire river, hydropower facilities come in all sizes. Technological advances and research have led some of the tiny

facilities (micro turbines) take advantage of water flows in municipal water facilities or irrigation ditches.

Wind Energy is another renewable source of energy that harnesses the power of wind through wind turbines collecting and converting the kinetic energy into electricity. Wind energy is actually a byproduct of the sun. The uneven heating of the atmosphere along with earth's irregular surfaces, and planets revolution around the sun combine to create wind.

Energy Generation and Transmission

Pinal County is served by several energy providers. Arizona Public Service, Salt River Project, Southwest Gas, and numerous Electrical and Irrigation and Drainage Districts all provide service in the County and several more entities have facilities such as the Western Area Power Authority, Tucson Electric Power, and the Southwest Transmission Cooperative.

Pinal County will work with these energy providers to facilitate the provision of sufficient energy for residents and businesses and to encourage development of new facilities within the parameters of the seven components of the Comprehensive Plan Vision for the Future.

According to the *CATS HV 2016 Transmission Study*, in 2016, annual electric power generation in Arizona is projected to be 30,997 megawatts and electricity used 24,819 megawatts. This means that overall, Arizona is anticipated to be a net energy exporter. However, this will not be the case throughout the year. During the summer months, Arizona providers must purchase additional power from other states to meet higher demands. Based on the 2006 state population of 6.3 million and using a straight line projection, each 100,000 people in Arizona will require 394 megawatts of power. The following table (7-1)

7-1: Pinal County Electricity Need

Population Growth	Additional Electricity Required
100,000	394 megawatts
500,000	1,970 megawatts
1,000,000	3,940 megawatts
2,000,000	7,880 megawatts
3,000,000	11,820 megawatts

Source: CATS HV 2016 Transmission Study

estimates the electrical energy needs of Pinal County at various population levels. This information is for illustrative purposes only as these needs change significantly by season.

Even with effective conservation and moving toward renewable sources, it is evident that additional traditional generation facilities will be needed (see table 7-1). In fact, several new generating facilities have recently been identified for development on the short term horizon. Citizens, governmental entities, and the energy providers will have to work closely together to ensure appropriate locations for new facilities.

Significant planning has been done to project future electrical power needs for the region. The delivery of new energy sources to homes and businesses will also require the delivery system. Additional generation and transmission project that have been identified in past, ongoing and future studies will be subject to review and approval by the ACC.

In summary, with Pinal County not being a direct service provider, its role in the energy future of the region will consist of providing education and information to the public, maintaining codes and policies to encourage conservation of energy, supporting the development of renewable sources, and coordinating with the energy industry to ensure appropriate development of adequate facilities.

Neither Pinal County's tax base nor legislative authority allow the County to play a large financial role in the energy future through incentives, tax credits, or other financing programs. However, the County can play a significant role in serving as the central point to assemble a diverse group of communities and regional stakeholders and partners to secure energy for future use.

The County can also be a leader in identifying new programs for funding sources to expand development of renewable energy sources.

Goals, Objectives and Policies

In order to make it easier for property owners to use the Goals, Objectives and Policies in the Plan and then incorporate them into their development proposals or amendments, the Policies have been placed into two separate categories. The two categories are:

- Public Responsibilities
- Private and Public Shared Responsibilities

Private development applicants should be aware of Public and Private Shared Responsibilities throughout the development process and should focus their Comprehensive Plan applications as specified in the implementation section of the Comprehensive Plan, or other relevant documents that set criteria for other applications.

Public Responsibilities are primarily incumbent on the County to implement through its policy development and planning.

Private and Public Shared Responsibilities, all entities, private and public, share the responsibilities of implementing these Policies.

Conservation

7.3 Goal: Improve the energy efficiency of Pinal County government.

7.3.1 Objective: Set an example by improving energy efficiency and use of renewable sources in County facilities, vehicle fleets, and equipment.

Policies:

7.3.1.1 Convert the vehicle fleet over time to alternative fuels.

7.3.1.2 Move toward compliance with green building benchmarks and programs for existing County buildings and facilities and require green building standards be developed in all new facility designs.

7.3.1.3 Locate solar energy generation equipment on County facilities which cost/benefit analyses proves advantageous.

7.3.1.4 Convert County facilities to low energy lighting and install energy efficient electrical equipment when economically feasible.

7.4 Goal: Improve the energy efficiency of structures in Pinal County.

7.4.1 Objective: Improve the energy efficiency of new construction and the existing building stock through building codes and processes.

Policies:

Public Responsibilities, those that are primarily incumbent on the County to implement through its policy development and planning, appear ***italicized***.

Private and Public Shared Responsibilities, all entities, private and public, share the responsibility of implementing these Policies and these policies appear in **plain text**.

7.4.1.1 Maintain the most up to date International Building Codes (IBC) and International Energy Conservation Code (IECC) and provide training for staff to implement.

7.4.1.2 Encourage the expansion of energy efficient building practices.

7.4.1.3 Work with municipalities and Native American communities to standardize energy efficiency requirements and codes throughout the County.

7.4.1.4 Support refurbishing and remodeling projects to include energy efficiency components through expedited permitting and assistance.

7.4.1.5 Encourage all residential, commercial and industrial construction to meet "ENERGY STAR" as a minimum efficiency standard.

ENERGY STAR is a joint program of the EPA and the U.S. Department of Energy helping to save Americans money and protect the environment through energy efficient products and practices.

7.4.2 Objective: Reduce energy demand through community design.

Policies:

7.4.2.1 Encourage developments that use energy smart site design (e.g., solar orientation, cluster development).

7.4.2.2 Encourage Sonoran-friendly landscaping in developments to provide shade.

7.4.2.3 Implement the Activity Center philosophy to bring employment, commercial, and educational activities closer to residents and increase multimodal transportation options including transit, bicycle, and pedestrian modes.

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7.5 Goal: Improve overall communication and collaboration regarding energy issues.

7.5.1 Objective: Provide energy conservation education and awareness in County communications.

Policies:

7.5.1.1 Provide energy conservation information on the County Web site with links to energy providers and conservation and consumer groups.

7.5.1.2 Work with energy providers to include energy conservation promotional materials to building owners at the issuance of Certificates of Occupancy.

7.5.2 Objective: Maintain cooperative working relationships.

Policies:

7.5.2.1 Hold periodic coordination meetings with energy providers to keep informed of the latest conservation programs offered.

7.5.2.2 The County should continue to participate in regional energy planning forums, such as the CATS Group, and work with the County's municipalities, Native American communities and energy providers to create a County-wide, long range energy strategy.

Renewable Sources

7.6 Goal: Expand renewable energy in Pinal County.

7.6.1 Objective: Support ~~small scale~~ renewable energy projects

Public Responsibilities, those that are primarily incumbent on the County to implement through its policy development and planning, appear ***italicized***.

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Policies:

7.6.1.1 Support statewide policy that provides property tax credits for renewable energy facilities on individual homes and businesses from net assessed valuation calculations.

7.6.1.2 Assess current codes so they are supportive in permitting ~~small scale~~ renewable energy projects. Explore ways to reduce barriers caused by homeowner's association restrictions.

7.6.1.3 Work with developers and energy providers to design neighborhoods with optimum solar orientation.

7.6.1.4 Support state and federal incentive programs for the development of renewable energy infrastructure for individuals and businesses.

7.6.1.5 Develop/amend ordinances to protect solar access through sensitive building orientation and for property owners, builders and developers wishing to install solar energy systems.

7.6.1.6 Support the transmission of renewable energy from sources within and outside of Pinal County.

7.6.2 Objective: Support the growth of the renewable energy in Pinal County.

Policies:

7.6.2.1 Identify through specific area planning potential locations for renewable energy projects.

7.6.2.2 Support the attraction of renewable energy providers through the County's economic development strategy.

Public Responsibilities, those that are primarily incumbent on the County to implement through its policy development and planning, appear ***italicized***.

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7.6.2.3 Work with economic development proponents to develop education and training programs for renewable energy employment opportunities.

Generation and Transmission

7.7 Goal: Support the provision of adequate energy for the future while protecting the natural environment and resources.

7.7.1 Objective: Identify and protect potential sites and corridors for new energy generation and transmission facilities.

Policies:

7.7.1.1 Work with energy providers through the specific area planning process to identify appropriate locations and buffering of future projects.

7.7.1.2 Work with energy providers to co-locate where possible facilities such as transmission lines, pipelines, substations, and terminals.

7.7.1.3 Encourage the adoption of designated generation and transmission and facility sites and corridors in future updates to County and municipal planning documents to protect against incompatible development and to maximize increased capacity.

7.7.2 Objective: Protect water and environmental resources.

Policies:

7.7.2.1 Monitor the evaluation process by other agencies of all proposals for new generating facilities to determine long-term impacts on water resources.

Public Responsibilities, those that are primarily incumbent on the County to implement through its policy development and planning, appear ***italicized***.

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7.7.2.2 Support innovative designs for new generating facilities that minimize water use.

7.7.2.3 Explore innovative water re-use strategies.

7.7.2.4 Discourage facilities from locating in designated environmentally sensitive areas and encourage facilities to be in context with viewsheds and waterways.

7.7.3 Objective: Provide information to citizens and the development community regarding future energy facilities.

Policies:
7.7.3.1 Keep up to date information about locations of existing and potential new generation and transmission facilities on the County Web site.

7.7.3.2 Review development proposals along with short and long range plans of energy providers to ensure an understanding of where facilities may be and to keep prospective residents and businesses informed.

7.7.4 Objective: Maintain cooperative working relationships with energy providers.

Public Responsibilities, those that are primarily incumbent on the County to implement through its policy development and planning, appear ***italicized***.

Private and Public Shared Responsibilities, all entities, private and public, share the responsibility of implementing these Policies and these policies appear in **plain text**.

Policies:
7.7.4.1 Hold a biannual "energy summit" bringing together providers, landowners and key county staff and leadership to discuss future plans and update one another on current planning and trends.

7.7.4.2 Work closely with energy providers during the evaluation of development plans to access cumulative, County-wide impacts on energy availability and reliability.

7.7.4.3 Coordinate with energy providers in the implementation of the Growth Areas element to ensure energy infrastructure is adequate to support growth and infrastructure development.

7.7.4.4 Encourage involvement of energy providers in area planning processes.

7.7.4.5 Continue to participate in regional energy planning forums such as the CATS Group

Urban Heat Island

7.8 Goal: Support strategies to reduce Urban Heat Islands and their environmental effects.

7.8.1 Objective: Identify key Urban Heat Island mitigation techniques and reduce Urban Heat Island effect through community planning and design

7.8.1.1 Work with municipalities to avoid the development of heat islands through land use planning, open space preservation between developments, site design, and building materials and colors.

7.8.1.2 Encourage underground, understructure and/or multilevel parking structures

7.8.1.3 Encourage the use of "cool pavement" materials, "cool roofs" and "green roofs"

Urban Heat Islands are built up areas that are hotter than nearby rural areas. Elevated heat island temperatures can cause environmental impacts. (EPA)

Cool Pavements include a range of technologies aimed at reducing urban heat island effect.

Cool Roofs is a term that describes roofing materials with a high solar reflectance.

Green Roofs is a term describing a vegetative layer grown on a rooftop that can be installed on a wide range of buildings

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Appendix D: Glossary

The terms defined in this glossary are done so for purposes of the Pinal County Comprehensive Plan only and may not be relevant or accurate for use outside of this plan.

Acre foot (ac/ft) is equivalent to the volume of water required to cover 1 acre to a depth of 1 foot.

Agriculture includes areas where agri-business activities are permitted, including traditional farming and ranching operations.

Alluvial plain is fairly flat, gently sloping landform found at the base of mountain ranges. The geography requires careful planning so that drainage patterns are preserved.

Airport Reserve surrounds existing airports to allow for adequate buffering of surrounding land uses, buffering of surrounding land uses, expansion of airport operations and facilities and employment uses compatible with the airport.

Aviation-Based Commerce Center is a facility served by passenger service and air freight providers; it should be buffered from incompatible uses and may have surrounding employment-related uses that take advantage of aviation services and allow for expansion of airport operations and facilities.

Bajadas are shallow slopes that lie at the base of rocky hills, where materials accumulate from the weathering of the rocks. They typically have a mixture of boulders, stones, gravel, sand and silt particles, creating a deep and complex soil structure that retains water and supports a rich vegetation.

Basic activities bring new dollars into the community.

Bioenergy is the form of renewable energy derived from living organic materials known as biomass.

Biomass is a renewable energy resource derived from plant and algae based materials.

Biome is a major regional or global biotic community, such as a grassland or desert, characterized chiefly by the dominant forms of plant life and the prevailing climate.

Buildout is defined as the ultimate development of land in Pinal County with appropriate land uses based on a series of assumptions, including land ownership patterns, topographic and environmental constraints and opportunities, development potential, infrastructure support, and private property rights.

The **Certified Local Government Program** is a preservation partnership between local, state and national governments focused on promoting historic preservation at the grass roots level.

Community Commercial is intended to be mid-scale (approximately 20 to 40 acres) of retail, service, and professional office.

Compendium is a concise, yet comprehensive, compilation of a body of knowledge.

Concentrating Solar-Thermal Power (CSP) systems use mirrors to reflect and concentrate sunlight onto receivers that collect solar energy and convert it to heat, which can be used to produce electricity or stored for later use.

Context Sensitive is defined as an approach by which development fits its physical setting and preserves scenic, aesthetic, historic and environmental resources.

Density is the number of housing units per acre developed or allowed to develop.

Density Bonus or Incentive is allowing higher density residential as a trade-off for including in a project a desired need such as open space or affordable housing unit.

Desert Habitats: Desert Habitats such as the Sonoran desert scrub habitats are low-elevation areas that receive less than 10 in (25 cm) of rain each year, mostly in bi-modal pattern (occurring in winter and summer). In these arid habitats, vegetation is generally sparse and represented by cacti and other succulents as well as other vegetative species including mesquite, ironwood, and palo verde, among others.

Design charrette is a workshop in which participants work together, collaborating or building off of others work, and present their findings in a public forum.

Eco-tourism is about creating and satisfying a hunger for nature, about exploiting tourism's potential for conservation and development, and about averting its negative impact on ecology, culture and aesthetics.

Employment is defined as areas that can support a variety of employment-generating business activities such as industrial, office, business park, and warehousing and distribution.

Endangered species are those in immediate danger of becoming extinct and in need of protection in order to survive.

ENERGY STAR is a joint program of the EPA and the U.S. Department of Energy helping to save Americans money and protect the environment through energy efficient products and practices.

Floor Area Ratio (FAR) is a formula for determining volume of building as a multiple of the lot area.

General Commercial provides locations for commercial development included in adopted municipal general plans. The Pinal County Comprehensive Plan does not make any changes to these locations. This category allows uses in unincorporated areas.

General Public Facilities/Services includes large public facilities that require significant space such as landfills, wastewater facilities, water campuses, and concentrations of public buildings.

Goals represent the desired outcomes or results that the County hopes to realize over time. Goals will align with Pinal County's Vision.

Geothermal Energy is heat energy from the earth – Geo (earth) + thermal (heat)

High Intensity Activity Centers are approximately 1,000 or more acres with a mix of professional office, business parks, and industrial often in a campus-like setting, as well as high and medium density residential.

Hohokam is a term derived from an O'odham word "Huhugam" that is often used to reference people and things that have gone before.

Horizontal Mixed Use combines residential, commercial and employment-type uses on the same site, but in separate buildings.

Hydrogen is a clean and flexible energy carrier. It can deliver and store energy.

Hydropower is a source of renewable energy that uses the natural flow of moving water to generate electricity.

Indian Community indicates a sovereign nation, operating under its own tribal government laws.

Landscape: Landscape is an area of land composed of an interacting variety of ecosystems with a diversity of physical elements. The configuration of a landscape is defined by the physical character, arrangement, and context of its elements. Combining both their physical origins and the cultural overlay of human presence, often created over millennia, landscapes reflect a living mixture of people and place that is vital to local and national identity.

Land use transition is defined as a gradual change in land use intensities to ensure compatibility.

Low Intensity Activity Centers are approximately 100 acres with a mix of professional office, commercial, tourism and hospitality uses, as well as medium to high density residential.

Major Open Space indicates lands preserved for recreational purposes or lands protected for cultural or ecological reasons.

Mid Intensity Activity Centers are approximately 500 acres with a mix of clustered professional office, commercial, tourism and hospitality uses, medical, and medium to high density residential.

Military represents the Florence Military Reservation, Silver Bell Army Heliport (SBAH) and other ancillary facilities.

Mining/Extraction identifies those areas where mineral resources have been identified or are likely to be identified in the future. The intent of this designation is to protect the mineral resources by minimizing conflicts with surrounding land uses. This designation recognizes the rights of exploration, mining, and processing of mineral resources. Copper mining is currently occurring around Superior and Kearny. All mining operations conducted by whatever techniques and technologies employed are required to comply with all applicable federal, state, and local laws providing for the protection of environmental resources.

Municipal Planning Areas (MPAs) are defined as the geographic areas around an incorporated city or town that is influenced by the city's land use pattern and may be incorporated into the jurisdiction at some point in the future.

Natural Resources: The naturally occurring assets that provide use benefits through the provision of raw materials and energy used in economic activity (or that may provide such benefits one day) and that are subject primarily to quantitative depletion through human use. They are subdivided into four categories: mineral and energy resources, soil resources, water resources, and biological resources.

Neighborhood Commercial is defined as less than 20 acres and is not shown on the Land Use Plan, but may be included in all land use designations if it addresses the Comprehensive Plan planning guidelines. Neighborhood commercial includes commercial goods and services and typically serves a surrounding residential population.

Noise Sensitive areas include properties that are adjacent to or within the flight path of airports, including Casa Grande, Eloy, Superior, San Manuel, and Coolidge Airports, Pinal Air Park, and Phoenix-Mesa Gateway Airport. The area is subject to high noise levels resulting from aircraft arrival and departures. The intent is to encourage land use compatibility with airport activities. The Noise Sensitive Area designation is an overlay designation with additional stipulations to the underlying designations.

Non-basic activities, in most cases, circulate existing dollars within the community.

Objectives are broad statements of intent to implement the goals and provide framework for the policies.

Photovoltaic (PV) is a cell that is used to convert sunlight into electrical energy. A single cell is small, typically producing about 1 or 2 watts of power.

Policies address how the goals will be achieved. Policies should be read as if it is preceded by the words "It is the County's general policy to…" Some policies may appear to conflict with one another.

Primary Airport are those airports that have 10 or more based aircraft and have 2,000 or more annual aircraft operations. These airports offer future economic development opportunities as they grow and expand.

Private and Public Shared Responsibilities, all entities, private and public, share the responsibilities of implementing these Policies.

Public Responsibilities are primarily incumbent on the County to implement through its policy development and planning.

Recreation/Conservation identifies areas under an extra layer of federal protection, meaning that any infrastructure planned to traverse these lands will have to go through a federal permitting process and environmental review.

Regional Commercial is intended to be large-scale (over 40 acre) retail centers that draw from a large regional market area. These centers might include malls, power centers, big box retail centers, and auto dealerships.

Riparian areas: Riparian areas are the natural areas around rivers, washes, and other bodies of water. These areas include channel itself as well as the vegetation that acts as a transition zone between the riparian and upland area.

Scenic vista is a view of an area that is visually or aesthetically pleasing.

Secondary Airport is an airport that does not qualify as a Primary Airport. These airports offer future economic development opportunities as they grow and expand.

Solar Energy is the energy produced by harnessing the solar radiation or the sun rays.

State Shared Revenues is a portion of revenues Arizona shares with local governments.

Threatened species are defined as those likely to become endangered if not protected.

Time Tax is the price paid sitting in long commutes that cuts into what we value most – our time with family, friends, home, and community.

Transit-Oriented Development is pedestrian-oriented development designed to facilitate access and use of transit facilities including buses, bus stops and light rail stations.

Vertical Mixed Use is typified by residential use over commercial uses in the same building or any other potential diversity of land uses within a building.

Viewshed is the entire area an individual can see from a given point.

Wildlife Corridors: Wildlife corridors are pathways or habitats with no or few barriers to wildlife species. These landscape linkages allow for the safe passage of daily, seasonal, or annual wildlife movements. Wildlife corridors often occur in riparian areas, canyons, ridgelines, and other landscape features that constrain wildlife movements into more restricted paths.

Wind Energy is a renewable energy source that harnesses the power of wind through wind turbines.

Wind Turbine is a device that converts kinectic energy of wind into electrical energy.