

Section Ten—Energy Element

10.1 Introduction

The function and operation of public and private institutions, businesses and homes in Yuma County and the nation as a whole are dependent upon a sufficient supply of affordable energy. Yuma County is dedicated to promoting sound energy policies.

Yuma County community members and businesses are aware of the need to promote sustainable use of energy throughout their daily lives. Increasing costs of energy coupled with environmental concerns related to pollution and consumption of natural resources affirm this awareness. Yuma County officials, employees and business owners are aware of the need to become more efficient consumers of energy through effective building techniques and use of alternative energy sources. The effort to be more efficient consumers of energy requires a collaborative effort between all Yuma County community members to reduce demand and increase efficient energy use within Yuma County. Alternative energy resources can be promoted to assist Yuma County to achieve efficient energy consumption.

Yuma County recognizes the need for energy efficiency. The Energy Efficiency and Conservation Block Grant (EECBG) Program, funded for the first time under the American Recovery and Reinvestment Act of 2009, authorized in Title V, Subtitle E of the Energy Independence and Security Act of 2007 (EISA) and signed into Public Law (PL 110-140) on December 19, 2007, provides funds to units of local and state government, Indian tribes, and territories to develop and implement projects to improve energy efficiency and reduce energy use and fossil fuel emissions in their communities. The Program is administered by the Office of Weatherization and Intergovernmental Programs (WIP) in the Office of Energy Efficiency and Renewable Energy (EERE) of the U.S. Department of Energy (DOE). The Yuma County Board of Supervisors received funds from this program which were utilized to perform an energy audit on all County buildings to increase energy efficiency of these buildings.

Public participation was a vital element in the creation of the 2030 Yuma County Comprehensive Plan. Public meetings were held by Planning staff at several locations across the County at which the Energy Element was discussed. At these meeting issues regarding energy that residents felt needed to be addressed were gathered. The concerns of residents brought up at these meetings are reflected in the policies and planned actions that are set forth in this element.

The energy policies and priorities section contains the policy positions and priorities of Yuma County regarding energy efficiency within unincorporated Yuma County. The policies and priorities contained within Section 10.5 are derived from comments and feedback from residents from across the County, comments from stakeholders, and from detailed plans, policies and ordinances regarding energy. Yuma County will support the applications of grants, projects and policy changes that will further advance these policies and priorities.

10.2 Existing Conditions

Energy availability and consumption in Yuma County is crucial for the operation and daily lives of Yuma County and its community members. This is especially apparent in the summer months when temperatures can exceed 120 degrees.

A typical home in Yuma County has an average annual use of 12.732 kilowatt-hours (kWh) of electricity. Annually from 2010 to 2019 Yuma County population growth averaged 0.40%. During this same time electricity usage grew at a rate of 1.3% annually. As the demand for electricity continues to increase, production must increase along with reliable infrastructure to deliver power to Yuma County consumers.

Energy Generation in Yuma County

Arizona Public Service's (APS) Yucca Generating Station located in Yuma County provides an abundance of energy for Yuma County. The natural gas fueled Yucca Power Plant consists of six combustion turbine units that produce nearly 243 megawatts; the Yucca Power Plant also includes a 75 megawatt steam turbine and a 20 megawatt combustion turbine.

Power is also delivered to Yuma County from the Palo Verde Nuclear Generating Station located in Maricopa County. The Palo Verde Nuclear Plant has been the largest power producer of any kind in the United States since 1992, producing more than 4,000 megawatts of electricity annually. Palo Verde uses treated effluent from several municipalities to meet its cooling water needs, unlike other nuclear plants in the United States which sit atop a body of water. Power is delivered to Yuma County via the Hassayampa to North Gila 500kV transmission line.

In the field of solar energy generation, Yuma County has four concentrated solar power plants: The Agua Caliente Solar plant produces 290 megawatts and occupies approximately 2,338 acres of land. The APS Foothills Solar Plant, which is located near populated areas of Yuma County, produces 35 megawatts in 400 acres. The Hyder 1 and 2 solar plants, located on the eastern edge of Yuma County off of Agua Caliente Road, produce a combined total of 30 megawatts of solar power.



Power Transmission Facilities in Yuma County

The Hassayampa to North Gila 500 kV transmission line delivers power from the Palo Verde Nuclear Generating Station in Maricopa County. This high voltage power line runs west from the power plant, supplying power to residents of eastern Yuma County, and then connects to the North Gila sub-station maintained by APS. From the North Gila sub-station power is then delivered throughout the grid via a system of 69 kV transmission lines.

A similar 69 kV transmission line from the Yucca Power plant in western Yuma County supplies power to County residents. Numerous transmission lines are located on arterial streets and other suitable areas throughout the County. Numerous electrical substations are located throughout Yuma County which act to reduce the voltage of power transmission lines for connection to the local power distribution system to homes and businesses.

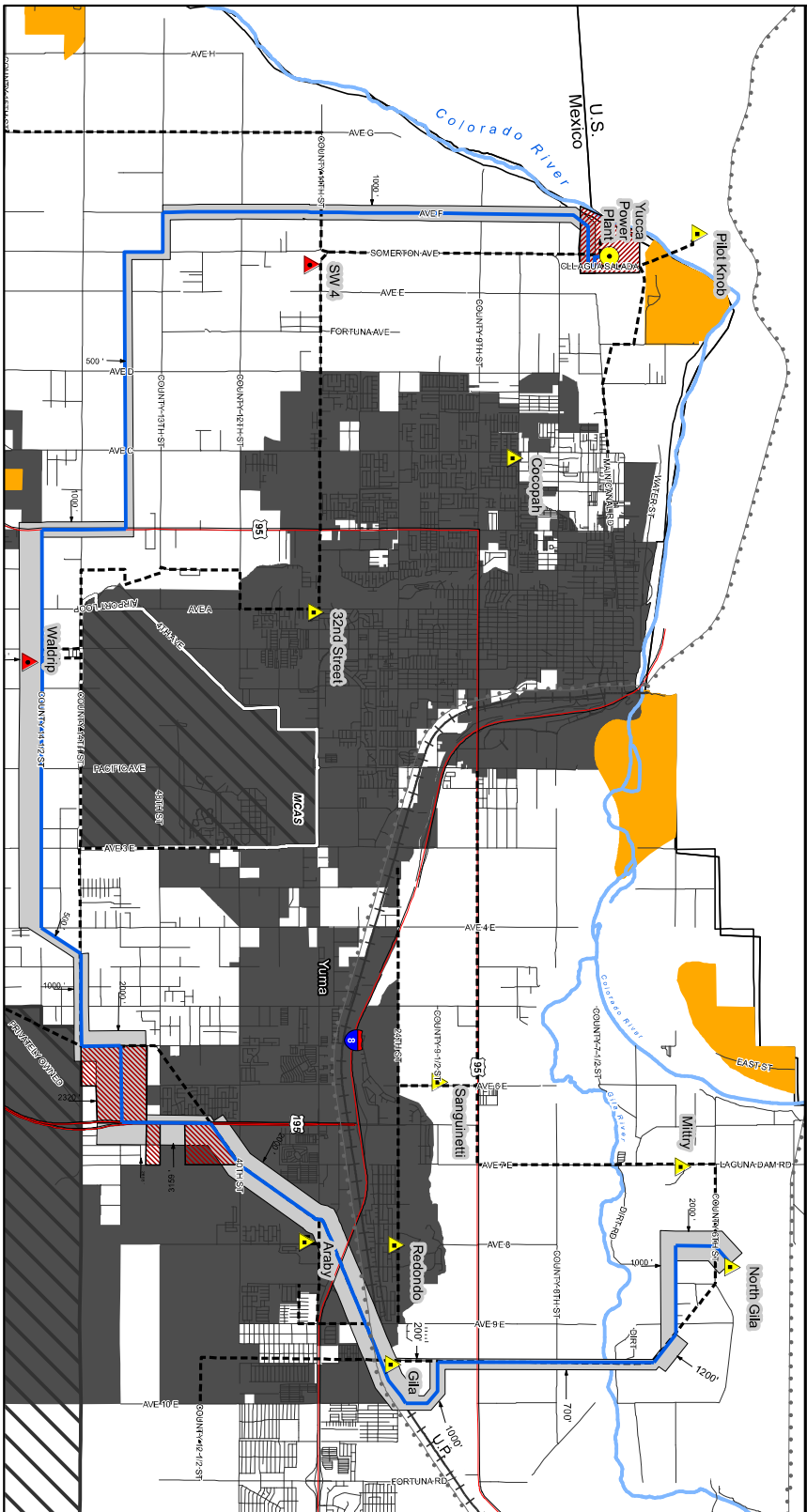
As Yuma County grows and the demand for power increases, utility providers must both improve existing and construct new infrastructure. Yuma County is dedicated to working with utility companies to mitigate any negative impacts this infrastructure could have on the local environment and its residents, while allowing expansion to serve residents' needs. The placement of electric power lines (115 kV and above) is decided through a state regulatory process that includes public input. Yuma County provides input into this process for facilities within the county. The Power Plant and Transmission Line Siting Committee makes recommendations on placement of the power lines to the Arizona Corporation Commission. The Commission has final approval of power line routes.




The North Gila-Orchard-Yucca 230 kV Power Line was initiated in 2010, the Arizona Corporation Commission (ACC) approved final routes and a substation location for a transmission project, to help ensure future electric reliability for Yuma County residents.

In February 2012, the ACC granted a Certificate of Environmental Compatibility (CEC) for the project. The project was planned in two phases. Construction of Phase I began in 2020, connecting the North Gila substation (Avenue 8E and County 6th Street) to the Orchard Substation (Avenue 5-1/2 E and County 14th Street). Phase II will connect the Orchard Substation to the Yucca Substation (Somerton Avenue and 8th Street), the timing of Phase II will be evaluated in the future.

Energy Element - North Gila to TS-8 to Yucca 230kV Transmission Line Project






● Power Plant
▲ Substation
▲ Future Substation
— Natural Gas Pipe Line
— Proposed 230kV Line
— Existing Transmission Line

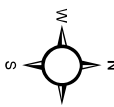
Yucca Power Plant Interconnection Area
 TS-8 Siting Area
 Project Corridor 230kV
 Marine Corps Air Station Yuma
 Military Boundary
 Indian Reservations
 Incorporated Areas

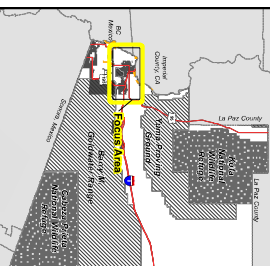
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 Yuma County Dept. of Development Services
 Source: Yuma County GIS Division, APS

Date: May, 2013
 Revised: February, 2022

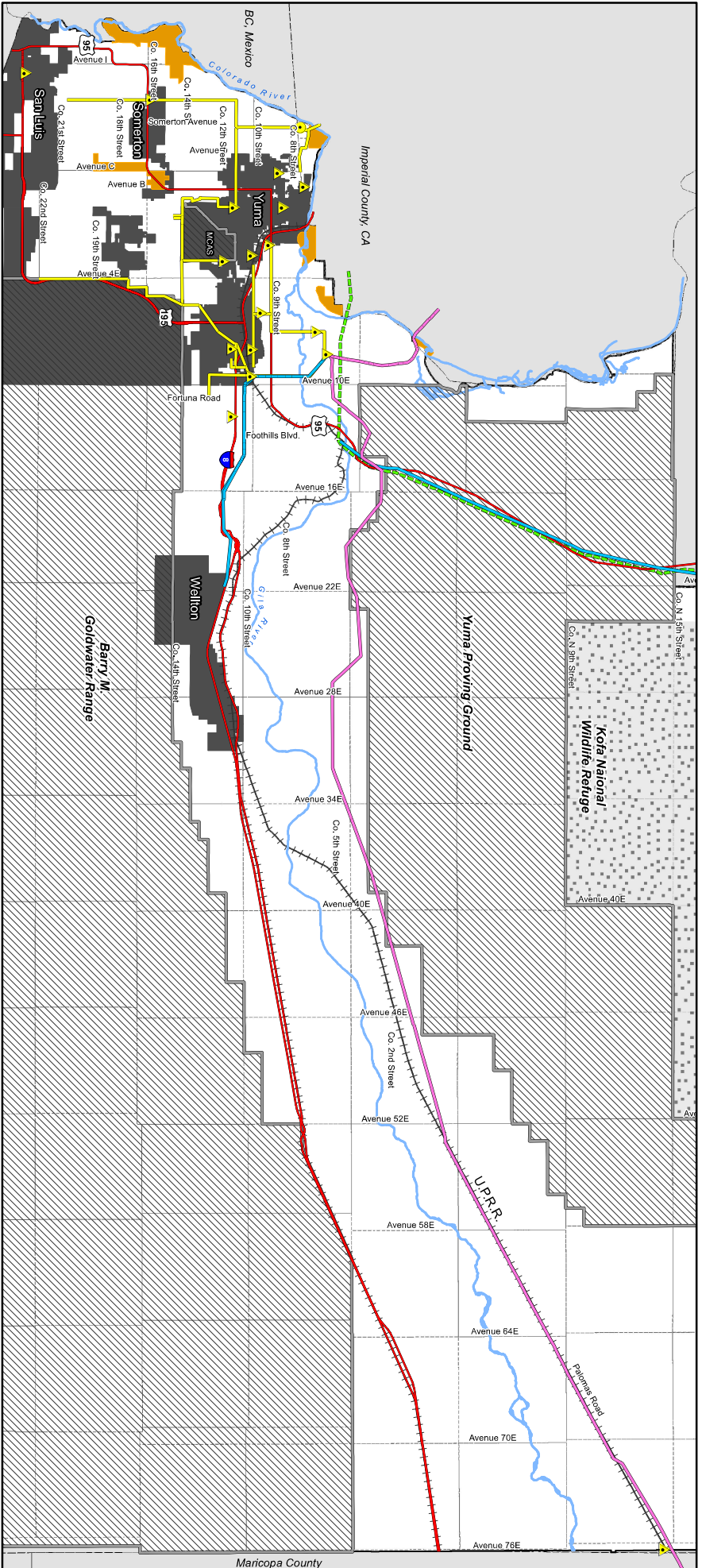
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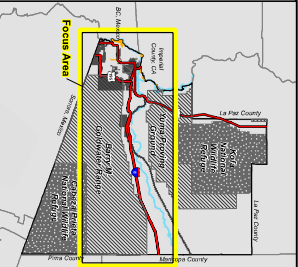
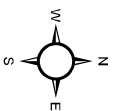
Energy Element - Yuma Area Transmission Plants



- Utilities**
- Substation
 - Power Plant
 - 115kV Transmission Line
 - 161 kV Transmission Line
 - 69kV Transmission Line
 - Natural Gas
- Land Use and Boundaries**
- Incorporated Areas
 - Marine Corps
 - Air Station Yuma
 - Indian Reservations
 - Military Boundary
 - National Wildlife Refuge

For information only. No liability assumed.
 Yuma County Dept. of Development Services
 Source: Yuma County GIS Division

Date: June, 2011
 Revised: February, 2022



10.3 Energy Conservation and Efficiency

Virtually all the energy used in Yuma County in 2020 came from nonrenewable sources. Yuma County can mitigate potential negative impacts of traditional energy sources by supporting preservation of agriculture lands, effective land use planning patterns, alternative energy sources and supporting emerging energy technologies. The practices outlined in this section will help Yuma County become more energy efficient.

Sustainable Building

Sustainable building or “green” building involves implementing various practices that minimize the depletion of natural resources, water and energy consumption and construction waste. Sustainable building practices are healthier for the occupants and the environment. When properly utilized they conserve energy and water and limit environmental impacts.

The US Department of Energy’s Energy Savers Handbook states that in a typical 2,000 sq. ft. home, 35%-40% of the annual energy bill can be attributed to heating and cooling costs. New and existing homes can be upgraded and made 20-25% more energy efficient by taking steps such as increasing insulation and sealing the building envelope to reduce air infiltration, provide shading for windows from direct exposure to sun, adding dual pane windows and replacing inefficient heating, ventilation and air conditioning (HVAC) systems. In addition to these steps, additional ways to make a home or business more energy efficient are listed below:

- Getting an energy audit of your home or business.
- Using energy efficient lighting and utilizing natural lighting.
- Weatherizing and sealing any air leakage.
- Providing shading with window sunscreens and architectural elements such as recesses, overhangs, patios and awnings.
- Upgrading to programmable thermostats.
- Installing and maintaining low water landscaping.
- Utilizing energy efficient appliances.
- Insulating hot water heater tank and pipes.
- Replacing inefficient doors and windows using Low-E and dual and triple pane windows on south and west exposures to reduce heat loss and gain.
- Replacing appliances and HVAC with more energy efficient systems when replacement is necessary.

10.4 Alternative Renewable Energy Sources

Energy-efficient improvements to buildings, appliances, equipment and construction will assist Yuma County to reduce energy consumption and increase efficiency. However, as technologies are perfected, a shift to renewable energy sources will play a crucial role in energy consumption. Renewable energy is energy which comes from natural resources such as sunlight, wind, and geothermal heat which are naturally replenished. Yuma County will provide support for the development of renewable energy sources which are in harmony with existing development and land use patterns throughout the County. These alternatives will be necessary to meet current and future needs and to lessen the region's dependence on non-renewable energy sources. Some of the renewable technologies listed below may be more suitable to the climate and geography of Yuma County. Ultimately the development of these alternative and renewable energy sources will depend on their availability, cost and public support.

Renewable Energy Sources:

Biomass: Any plant-derived organic matter. Biomass available for energy on a sustainable basis includes herbaceous and woody energy crops, agricultural food and feed crops, agricultural crop wastes and residues, wood wastes and residues, aquatic plants and other waste materials including some municipal wastes. Biomass is a very heterogeneous and chemically complex renewable resource.

Geothermal Energy: As used at electric power plants, hot water or steam extracted from geothermal reservoirs in the Earth's crust that supplies to steam turbines at electric power plants that drive generators to produce electricity.

Hydrogen Power: The use of moving water to drive a turbine generator to generate electricity.

Solar Energy: The radiant energy of the sun which can be converted into other forms of energy, such as heat or electricity.

Wind energy: Energy present in wind motion that can be converted to mechanical energy for driving pumps, mills and electric power generators. Wind pushes against sails, vanes, or blades radiating from a central rotating shaft.

10.5 Energy Policies and Priorities

- EPP.1:** Support the provision of adequate energy for the future while protecting the natural environment and resources.
- EPP.2:** Maintain cooperative working relationships with energy stakeholders in Yuma County.
- EPP.3:** Increase public understanding, support and involvement regarding energy issues.
- EPP.4:** Promote the energy efficiency in Yuma County.
- EPP.5:** Promote reduction of energy demand through community planning.
- EPP.6:** Support growth of renewable energy in Yuma County.
- EPP.7:** Increase local knowledge and commitment to become more energy efficient through sustainable building practices.

10.6 Energy Actions

- EA.1:** Work with utility providers through the planning process to identify appropriate locations and buffering for future energy generation and transmission projects.
- EA.2** Keep current information and review development proposals from utility providers to ensure an understanding of where facilities may be and to keep citizens and businesses informed.
- EA.3** Work closely with utility providers during planning and evaluation of development plans to assess cumulative, county-wide impacts on energy availability and reliability.
- EA.4** Yuma County will set an example by improving energy efficiency and use of renewable sources in County facilities and equipment when economically feasible.
- EA.5** Yuma County shall replace electrical equipment with more energy efficient equipment (appliances, HVAC, lighting) when necessary and when economically feasible.
- EA.6:** Promote energy efficient construction and effective land use patterns.
- EA.7:** Create informational brochures for distribution to contractors and homeowners for rooftop solar panels and water heaters.
- EA.8:** Create information packets and outreach programs to educate Yuma County residents on energy efficiency in the home and office.
- EA.9:** Provide energy conservation information on the Yuma County website with links to energy providers.
- EA.10:** Assess current plans and identify potential locations for renewable energy projects.
- EA.11:** Promote tree planting as a way to reduce summer cooling loads in homes and buildings.