

February 24, 2010

Memo

To: Regional Plan Citizen Advisory Committee

From: Core Planning Team – Kimberly Sharp and Tiffany Antol

Please find a DRAFT Energy Element section for the Regional Plan 2012. The CAC has full purview to edit, delete and add.

This DRAFT was compiled by Kimberly Sharp and Tiffany Antol, planners, who have attempted to bridge:

- Approximately 70 public comments
- Focus Group suggestions
- Background information from community groups, government groups, departments, and energy suppliers
- Suggested Goals and Policies from community members (F3 ++)
- Comments from utility providers, energy use and emissions reports, city and county staff comments

Goal for this DRAFT review:

The goal for this review is not to wordsmith. The goal is to review and suggest edits for

- **Goals** – are these in line with ARS requirements? Are these in line with community comments?
- **Policies** – are these based upon public comments YOU have heard? Do these reflect potential positive change YOU feel our community is capable of? Do YOU feel these address the (DRAFT) Guiding Principles?
- **Strategies** – will become indicators; we can keep a running tab of suggested ‘strategies’ or ‘indicators’ for each policy as we move forward.
- **Guiding Principles Test** – to conclude the discussion, this quick one page review of proposed policies against the guiding principles will allow each CAC to ‘check off’ relationships as the goals and policies are discussed. This will also allow each CAC member to write any suggested edits. This is to be turned in at the end of the meeting.

A few assumptions:

- **Format** – each element subject will be written as a draft with:
 1. Introduction
 2. Relationship to RP Vision and Guiding Principles
 3. Background
 4. Goals & Policies
- **Style** – each element will be drafted with slightly different style, depending on who is writing it. The CAC is encouraged to let the planners know which style stands out as clear and easy to understand. We will then edit along the way so that all of the sections reflect a similar ‘style’.
- **Putting it together**– there are a number of elements in each of the three ‘sections’. These will be drafted together as we come closer to completing those sections. For example, Environmental Quality contains (6) elements; we will work on the individual elements one by one [Energy in March, Water in April, etc.]. Then in June, we can look at what has been drafted for all six elements within the Environmental Quality section, and can draft in introduction to that section, set overall goals for that section, and/or combine and edit the strategies and indicators to work cohesively, if the CAC so wishes.
- **Cross reference**– as each element is drafted; we will review relationships with other elements, as well as potential policy implications with goals and strategies. In the end, the goal is to cross reference goals and policies on-line with hyperlinks; in the written document with notes.

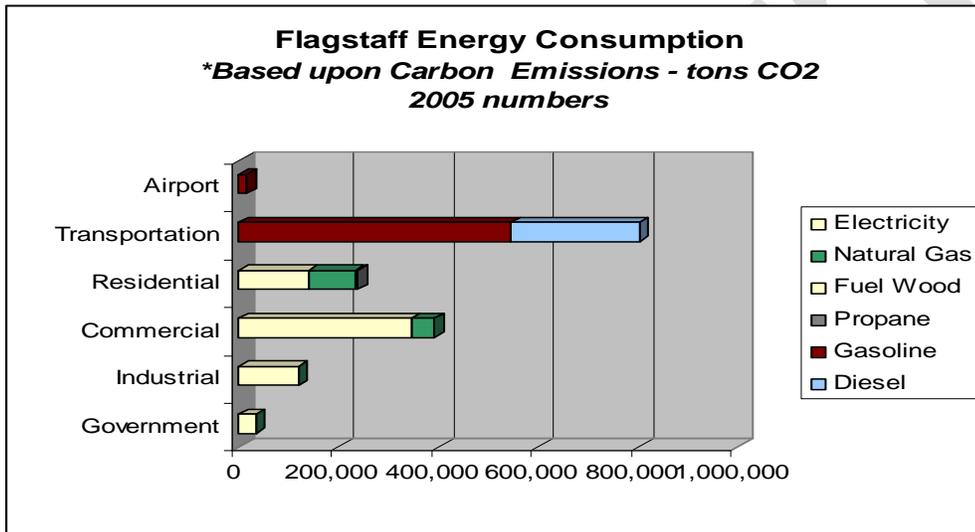
Thank you for taking time to review this DRAFT. All of your comments and suggestions will be taken into consideration.

Items in blue mean –need more information.

ENERGY ELEMENT

INTRODUCTION

The majority of energy used in the Flagstaff Region comes from non-renewable sources, which include electricity generated from coal plants and nuclear; natural gas and propane for heating and cooking; and oil and gasoline for motor vehicles. The primary consumers are commercial/industrial and residential uses with the former consuming nearly 70% of all energy within the Region.¹ Traditional energy consumption can be reduced by making better land use and transportation decisions within the Region, as well as increasing energy efficiency and encouraging the development of renewable energy sources. The benefits of long-term energy sustainability include improvements in our local economy, reliable and secure energy supplies, reduced dependence on imported energy sources and positive environmental impacts.



Source: Greenhouse Gas Emissions Management Report (2008) – Flagstaff Sustainability Program

Note: Carbon Emissions are a proxy for energy used

RELATIONSHIP TO REGIONAL PLAN VISION & GUIDING PRINCIPLES

Energy supply is an important component of a successful community. The impacts of increasing energy efficiency and the use of renewable energy furthers the vision for “*intellectual, environmental and economic vitality*” by: encouraging the development of new products and technologies locally; reducing the community’s reliance on non-renewable supplies; and maintaining a consistent energy supply through diversification. The following goals and polices address many of the primary Guiding Principles contained within this plan. At the forefront is the principle of sustainability, which includes and enhances the principles of healthy eco systems, environmental protection, smart growth and quality development, and creating a vibrant economy.

¹ Source cited here

A. Energy Efficiency

Decreasing the amount of energy used by promoting the wise use of energy is the most economical solution to reduce climate change, promote energy independence and increase economic vitality. Both the City and County have been proactive in developing programs and codes to promote the energy efficiency in new buildings and the retrofit of existing structures. As the region's population increases, there will be greater demands for energy which is why our public and private planning decisions should focus on efficiency.

The Region's programs and codes promote energy efficiency through **education and outreach**. The Sustainable Building Program Checklist, which certifies "sustainable" construction projects, requires standards above the International Energy Code baselines; this program also supplies research on latest technologies and provides fact sheets on weatherization, insulation, efficient appliances, and annotated lists of local, state, and federal incentives for energy efficiency. Energy efficiency education is incorporated into many sustainable building programs at both Coconino Community College² and Northern Arizona University³. The Flagstaff Unified School System has recognized energy efficiency in school buildings as a cost savings as well as K-12 energy education.⁴

Continual effort to ensure energy efficient **buildings**, whether new or retrofit is the most effective cost savings a home or building owner can realize. With funding through the Federal Recovery Act of 2009, through the Department of Energy, the City of Flagstaff's Sustainability Program has partnered with the County's Sustainable Building Program and Coconino County Community Services, to promote residential energy efficiency retrofits throughout the region. Both City and County buildings have gone through rigorous energy evaluations and efficiency retrofits. For the City, this has resulted in a 42% annual savings in natural gas, electric and water, which is more than \$335,000 annually. APS will also be offering weatherization programs for their customers.⁵ Northern Arizona University has incorporated energy efficiency through its 'green construction' and sustainability initiatives.⁶

How the Region's urban **land uses** are designed plays a major role in energy efficiency. For example, compact development leads to driving less and walking more; smart site design takes advantage of solar gain; and green building techniques use less energy to heat buildings. Both Regional Plan policies and the City's Zoning Code play a role in the urban form of our community and both encourage efficient land use or 'smart growth' principles.

One of the greatest uses of energy in the Flagstaff Region is for **transportation**, namely, single-occupant vehicles. Transportation energy efficiency can be achieved by strengthening use of travel alternatives, such as public transit, bicycle and walking, and decrease the population's auto dependency through smarter development patterns. These are individual choices, yet the urban form can greatly influence people's choices.

Energy efficiency is also the best way to reduce costs for utility providers and their customers. APS considers energy efficiency as part of their 'power portfolio' with specific goals of growth in this area.

*Graphic here:
Source:*

² Note CCC programs here

³ Note NAU programs here

⁴ Note FUSD programs here

⁵ www.acs.com/

⁶ <http://www.green.nau.edu/buildings.html>

Goal E1: Increase Energy Efficiency

Policies:

Education

1. Promote and encourage innovative building practices with collaboration of government, FUSD, NAU, CCC and community partners to offer instruction on efficient building materials and methodology.
2. Support workforce training for renewable energy installation and maintenance.
3. Empower all community members to make smarter energy choices.

Building

4. Require the highest level of energy efficiency in all buildings, knowing that life-cycle costs are part of the equation for affordability. *Full IECC code compliance?*
5. Build upon energy efficient retrofit program, and develop an extensive efficiency upgrade program for existing buildings. *Is this a strategy?*
6. Require energy efficient technologies and designs for all new and retrofit commercial and industrial development.
7. Promote the publication of energy costs for all structures on MLS listings.⁷ *Is this a strategy?*

Land Use

8. Reward innovative land use and smart site planning techniques, such as clustering, building orientation, multiple use facilities, and appropriate building material for construction.

Transportation

9. Promote and encourage the expansion and use of public transit and alternative transportation networks.
10. Promote and encourage the use of fuel efficient vehicles and vehicles that use renewable fuels and/or electricity.

Community Indicators (or measures & progress) – how will we know if we are successful?

Ex: Increase Energy Efficiency by ____% by 2020; define what this means & how it is measured (APS)

Ex: Increase Public Transit ridership by ____% by 2020; (NAIPTA)

Ex: ____% increase of consumer change from traditional vehicles to hybrid or electric vehicles. (ADOT)

⁷ Site another community example of this

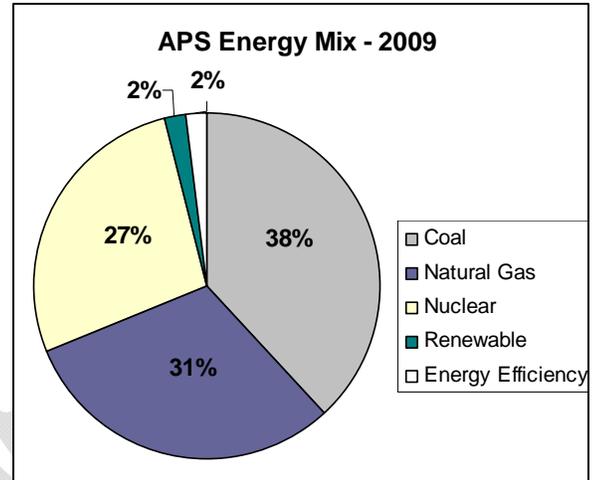
B. RENEWABLE ENERGY

Both at the small and large scale, the Flagstaff Region could further utilize passive solar, photovoltaic panels, solar hot water, solar thermal generators, wind turbines, biomass, and geothermal. Northern Arizona has the greatest **solar** gain capacity in the state because of our elevation.⁸ The region's **wind** resources are deemed adequate for residential wind projects.⁹ Another renewable fuel already used extensively is **wood** for home heating. This resource is also being explored for **biomass** energy production, especially with the availability of a large volume of trees from forest thinning projects. The current challenge to biomass fuel production is long-term federal contracts for forest thinning.

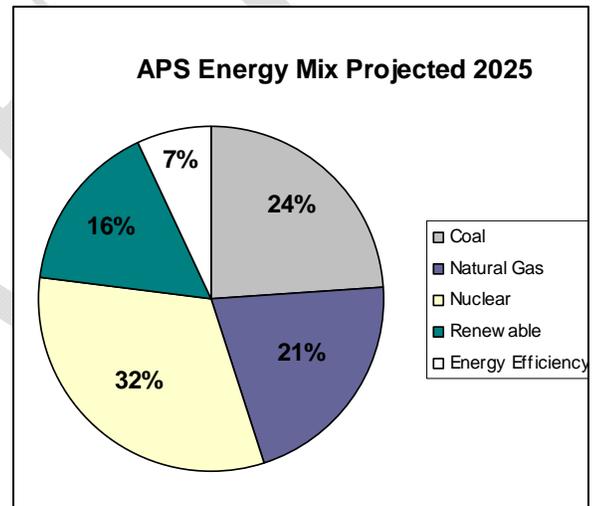
The Region may have an abundance of these raw resources, and APS is extending transmission systems to areas with photovoltaic and wind potential, yet the inadequacy of the existing energy grid is a significant challenge to large scale renewable energy generation. Current renewable energy production for APS is 2%; their goal being 16% by 2025. This is in line with the community's goal to tap into and use more renewable energy.¹⁰ There continues to be ongoing discussions about a biomass facility for the Bellemont Area.

Small scale wind and solar are already permitted uses within the Region. Since 2000, there have been approximately _____ residential solar and _____ wind turbine installations; _____ commercial solar and _____ wind turbine installations.

Community members are pursuing renewable energy projects for several reasons, including: 1) to be green and reduce reliance on corporate providers; 2) to have an impact on greenhouse gas reduction; 3) to take advantage of local, state and federal tax incentives; and 4) to provide energy to those who live 'off the grid' and rely on renewable energy. Even though Flagstaff is urban, the region is rural. The Flagstaff Region is also home to a local manufacturer of small wind energy systems (Southwest Windpower) which is both a community resource and asset. Large scale wind and solar projects are likely to begin developing in the County as there are many areas currently under study. The locations for these facilities are outside of the Regional Plan boundaries in the more remote areas, yet they are possible suppliers to properties within the plan boundary.



Arizona's Energy Future: APS Resource Plan 2009 through 2025



Arizona's Energy Future: APS Resource Plan 2009 through 2025

Community's goals of overall energy mix here

⁸ NAU Solar studies website:

⁹ NAU Wind energy studies website

¹⁰ [http://www.aps.com/files/various/ResourceAlt/Resource Plan - Presentation sFinal.pdf](http://www.aps.com/files/various/ResourceAlt/Resource%20Plan%20-%20Presentation%20sFinal.pdf)

Private large scale renewable energy production projects

(and potential Kw production)

- Sunshine Wind Energy Project – outside of planning area; has yet to find a purchaser for the power *(and potential energy Kw)*
- Grapevine Wind Energy Project – still in early planning stage, no approvals have yet been sought for this project, outside planning area *(and potential energy Kw)*
- Red Gap Ranch – outside planning area *(and potential energy Kw)*

City renewable energy projects completed:

- 2004-2008 municipal buildings energy efficiency overhaul
- Green energy purchase (11% of energy purchased)
- Wildcat Waste Water Treatment Center installed a cogeneration system, which combusts digester gas to produce energy (2.55 million kilowatts of electricity by 2012 – *annual?*)
- Flagstaff AquaPlex uses solar hot water heating for the pool facilities (235,000 KW annual)
- Flagstaff City Hall – 13KW solar system

County renewable energy projects completed:

- Solar audit on all County building for potential PV's
- Green energy purchase (20% of energy purchased)

Northern Arizona Renewable Energy Purchasing Group (NAREG): *partners, how much, etc.*

APS has upgraded existing utility infrastructure with 'Smart Grid' technology. The majority of homes and businesses within the Region are now equipped with "Smart Meters," which allow customers to analyze their energy use and calculate their carbon footprint (www.aps.com). Every APS consumer has the opportunity to purchase 'green power' through the Green Choice program. ____ (number of percent) of the region's community members currently participate in this program.

The Arizona Corporation Commission (ACC) approved Renewable Energy purchase requirements for public utility providers ____%.

Goal E2: Expand use of renewable energy

Policies:

1. Promote renewable energy sources over non-renewable energy sources for the entire range of land uses: residential, commercial, industrial, institutional, and both indoor and outdoor recreational uses.
2. Pursue and promote commercial scale renewable energy production such as biomass facilities, solar electricity, wind power, waste-to-energy and other alternative energy technologies.
3. Further develop public education in both the public and private sector so that renewable energy production is incorporated into everyday learning.

Community Indicators (or measures & progress) – how will we know if we are successful?

Ex: A biomass energy production facility has been successfully built in the region by 2020.

Ex: Individual green energy purchase has increased from ____%(currently) to ____% by 2020.