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November 9, 2010

TO: MAG Dark Sky Stakeholders Group

FROM: Heidi Bickart, Regional Planner

SUBJECT: MEETING NOTIFICATION AND TRANSMITTAL OF TENTATIVE AGENDA

Tuesday, November 16, 2010, 1:30 p.m.
Saguaro Room 2nd Floor
302 North 1st Avenue, Phoenix

The MAG Dark Sky Stakeholders Group will meet at the time and location listed above. Interested parties may attend in person or by telephone conference call. Those attending by telephone conference call are requested to contact Steve Gross at (602) 254-6300 for dial-in instructions.

Parking is located under the building and tickets will be validated. For those using transit, the Regional Public Transportation Authority will provide transit tickets for your trip. For those using bicycles, please lock your bicycle in the bike rack in the garage. If you have any questions about the meeting, please contact me at (602) 254-6300.

The following are tentative agenda items for the November 16, 2010 Dark Sky Stakeholders Group meeting:

1. Welcome and Introductions.
2. Purpose of Stakeholder Group.
3. Background.
4. Review of Frequently Asked Questions (FAQ). Please see enclosed FAQ.
5. Information sharing and discussion from MAG member agencies and stakeholders.
6. Questions.
7. Date of Next Meeting.

Please feel free to invite others that you feel may be interested in the topics on the agenda.

MAG Dark Sky Project - Frequently Asked Questions (FAQ)

What is MAG?

The Maricopa Association of Governments (MAG) is a Council of Governments (COG) that serves as the regional agency for the metro Phoenix area. When MAG was formed in 1967, the elected officials recognized the need for long-range planning on a regional scale. They understood that many issues such as transportation, air quality and homelessness for example, transcend city boundaries.

MAG was founded in the spirit of cooperation. MAG members believe that by uniting, they can solve common problems, take an active role in long-range regional issues and address concerns that affect all of the communities.

MAG is the designated metropolitan planning organization (MPO) for transportation planning in the Maricopa County region. MAG has also been designated by the Governor to serve as the principal planning agency for the region in a number of other areas, including air quality, water quality and solid waste management. In addition, through a Governor's Executive Order, MAG develops population estimates and projections for the region.

What is MAG's policy structure?

The Regional Council is the governing and policy-making body for the organization and is composed of elected officials appointed by each member agency. For the majority of members, the city or town Mayor serves as the Regional Council member. The Chair of the Board of Supervisors usually represents Maricopa County on the Regional Council. The State Transportation Board members for Maricopa County represent the Arizona Department of Transportation (ADOT). The Chair of the Citizens Transportation Oversight Committee also serves on the Regional Council. Currently, the Governor of the Gila River Indian Community, the President of the Salt River Pima-Maricopa Indian Community, and the President of the Fort McDowell Yavapai Nation serve on the Regional Council.

The MAG Management Committee provides a key role in the policymaking decisions at MAG. The Committee is responsible for receiving input from technical committees, analyzing the technical and policy implications, and providing recommendations to the MAG Regional Council. The Management Committee consists of the chief administrators from each member agency, such as the jurisdiction's city or town manager, the county manager from Maricopa County, and the chief administrative officer of each Native American Indian Community. The director of the Arizona Department of Transportation and the executive director of the Regional Public Transportation Authority represent their respective agencies on transportation issues that are brought before the Management Committee.

Other MAG committees include Policy Committees established to provide specific policy recommendations to the Management Committee and Regional Council, and Technical Advisory Committees consisting of professional experts to assist in program development. MAG policy and technical committees as well as stakeholder groups, like the Dark Sky Stakeholders Group, can provide recommendations to the Management Committee.

How was the Dark Sky Stakeholders Group (DSSG) formed?

In January 2009, the MAG Management Committee approved convening a Dark Sky Stakeholders Group (DSSG). Jurisdictional managers were encouraged to send staff.

What is the purpose of the MAG Dark Sky Stakeholders Group?

The purpose of this Stakeholders Group was to collect information on outdoor light pollution, review best practices in lighting codes, and to develop a draft Pattern Outdoor Lighting Code that could be used by MAG member agencies for updating their outdoor lighting codes.

How can I find more information on the MAG Dark Sky Stakeholders Group?

MAG has been working on the issue of light pollution for a couple years. All information on this topic can be found on the Dark Sky project page of the MAG website:

<http://www.azmag.gov/Projects/Project.asp?CMSID=1082>

Who is the MAG Dark Sky Stakeholders Group Contact?

Heidi Bickart, Regional Planner, 602.254.6300, hbickart@azmag.gov

Who participated in the DSSG in 2009?

Elizabeth Alvarez, National Optical Astronomy Observatory

Stacey Bridge-Denzak, Avondale

Dan Brocious, Smithsonian Astrophysical Observatory

Carol Johnson, City of Phoenix

Chris Luginbuhl, US Naval Observatory

Mike McCauley, Queen Creek

Kyle Mieras, Town of Gilbert

Brian Rose, Town of Buckeye

Paul Scowen, ASU

Gordon Sheffield, Mesa

Mike Sills-Trausch, City of Glendale

Gene Slechta, Town of Fountain Hills

James Truman, Citizen

Patty Zaricor, Maricopa County

Why did MAG develop a draft Pattern Outdoor Lighting Code?

- To update existing (out-of-date) outdoor lighting codes of MAG member agencies.
- To preserve Arizona astronomy - a 250 million dollar per year business.
- To help the member agencies save energy and in turn save costs from recognizing and prohibiting unshielded and excessive outdoor lighting .

In the summer of 2008 the MAG Executive Director was approached by a member of the International Dark Sky Association with a request to make a presentation to all MAG member agencies on the growing outdoor light pollution in the MAG region. The International Dark Sky Association saw MAG as an efficient way to reach many jurisdictions. They offered staff from the astronomy community to help MAG form a stakeholders group and create a Pattern Outdoor Lighting Code (POLC).

Dr. Buell Januzzi, Past Director of the Kitt Peak Observatory, provided a report to the MAG Management Committee and Regional Council about issues related to outdoor light pollution in Maricopa County. He explained that outdoor light pollution represents a potential waste in energy and money, and degrades the visibility of our night skies. This affects the world-class observatories located in the state. During the presentation, the counties, municipalities and Native American Indian communities were invited to consider revisiting the adequacy and enforcement of their respective lighting ordinances.

What is a *pattern* code?

A *pattern* code has a wide range of options. The draft MAG POLC does not intend to offer a single solution appropriate for all communities or situations. It offers instead a comprehensive guide describing issues relevant to the control of the obtrusive aspects of outdoor lighting, and a list of effective regulatory approaches to mitigate these aspects. The draft MAG POLC is intended for use by any community of any size or locale that wishes to create a new, or update an existing, outdoor lighting code.

What is the need and purpose for an outdoor lighting code?

- To permit reasonable uses of outdoor lighting for nighttime safety, utility, security, and enjoyment while preserving the ambiance of the night.
- To conserve energy and resources to the greatest extent possible.
- To minimize glare and obtrusive light by limiting outdoor lighting that is misdirected, excessive, or unnecessary.

What is the dark sky project background?

Date	Activity
August 2008	MAG Executive Director meets with a member of the International Dark Sky Association and authorized a presentation to the MAG Planners Stakeholders Group (PSG).
October 2008	Dr. Buell Januzzi, Past Director of the Kitt Peak Observatory, provided a report to the MAG Management Committee. He stated that outdoor light pollution creates a significant waste of energy and money, and degrades the visibility of our night skies. This affects the world-class observatories located in the state.
December 2008	Dr. Januzzi gave the same presentation to the MAG Regional Council.
January 2009	MAG Management Committee approved convening a Dark Sky Stakeholders Group (DSSG). Jurisdictional managers were encouraged to send staff.
March-September 2009	DSSG collected information on outdoor light pollution, reviewed best practices in lighting codes, and developed a draft Pattern Outdoor Lighting Code (POLC).
October-November 2009	Made revisions to the POLC.
December 2009-January 2010	Comments collected from MAG legal counsel.
February 2010	MAG staff briefed Intergovernmental representatives.
July 2010	Held Dark Sky Workshop to gather comments from external stakeholders on the draft POLC.
August 2010	Evaluated all comments from external stakeholders and revised the POLC.
September and October 2010	MAG staff updated Intergovernmental representatives.
October 2010	Updated MAG Management Committee.

Does an Outdoor Lighting Code regulate street lights?

Typically the municipality’s Street or Transportation Department sets and implements street lighting standards.

What is a lumens cap and how does it work?

The majority of issues associated with overlighting can be addressed effectively by an overall cap on the amount of light permitted, scaled to the area to be developed - lumens per acre caps. (Lumens are a measure of light output as seen by the human eye and can be found on every lamp package and catalog description.)

Lumens per acre is a simple calculation that does not require specialized technical training. Essentially it measures the totally amount of visible light present over a given area, in this case an acre.

Newer versions of Outdoor Lighting Codes include a lumens cap. The lumens cap provides maximum flexibility for the lighting designer to work within an overall "lumen budget" in order to creatively achieve the goals presented by clients. As long as the lumen amounts permitted within the lumen cap

provide reasonable amounts of light for the designer to work with, professional quality designs can achieve the goals and solve the problems, if any, of each lighting situation by trading off amounts of decorative and general illumination, areas to be illuminated, illumination levels and uniformities, types of luminaire optical design, and other factors to achieve quality lighting without the code telling them permitted illuminance levels for each situation.

What about holiday lighting?

Seasonal decorative lighting is usually exempt from Outdoor Lighting Codes and is exempt from the MAG Draft POLC during the holiday season.

What about existing lighting?

Outdoor lighting codes usually grandfather any installation compliant with the previous regulations. Modifications and new installations are where the new code would take effect. MAG Legal Counsel advised that it is difficult in Arizona to require existing uses to comply with new code requirements, unless there is a change in the existing use.

What about retrofitting? Is there additional expense for existing businesses?

There are no requirements for retrofitting existing signs. Currently existing sign lighting will not be affected by adoption of the POLC.

What are Lighting Zones?

Environmental zone ratings (Lighting Zones) have been developed by the Commission Internationale de l'Eclairage and by the Illuminating Engineering Society of North America (IESNA) to help ensure that the lighting goals of an environment are appropriately defined and met, but not exceeded. Simply put, the amount of light allowed in a given zone is tailored to the density of development, activity levels and needs of the zone users. For example, a densely developed commercial district would have a higher lighting allowance than an agricultural area.

What is the impact on planning and code enforcement staff in terms of administering an outdoor lighting code?

Outdoor lighting codes have been in place in various Arizona communities since the 1970s and have not been shown to create an unusual administrative load. At a MAG DSSG meeting, the jurisdictions of Buckeye, Fountain Hills, Gilbert, Maricopa County and Mesa commented that the code would not have a significant workload impact for them.

Some jurisdictions have web-fillable or downloadable forms for the Existing Lighting Inventory and Lumen Output Calculation Sheets as well as examples of properly prepared applications.

As with any code, implementation and enforcement of a lighting code will impact the code enforcement staff. In addition to the time required to review materials related to lighting, and follow-up on-site to verify compliance, the staff will need to develop some familiarity with lighting terms such as lumens,

and how to reliably evaluate the shielding characteristic of luminaires. Further, enforcement of any code includes not only the assurance that plans and construction conform to the standards of the code when the building or lighting permit is issued and when the project is completed, but also monitoring of continuing compliance after the project is completed.

Can MAG adopt the POLC?

The POLC is not for adoption by MAG. It is anticipated that MAG member agencies may adopt the POLC either in whole or in part as necessary for their jurisdiction.

Have crime and safety been addressed in the POLC?

The purpose of the POLC is to define practical and effective measures to minimize obtrusive outdoor light, while preserving safety, security, and the nighttime use and enjoyment of property. A common question is the connection, if any, between lighting and crime. Several reports and studies were analyzed and the information was provided to the DSSG by Dan Brocius, Whipple Observatory in 2009. According to the International Dark Sky Association, "the idea that more light always results in better safety and security is a myth. One needs only the right amount of light, in the right place, at the right time. More light often means wasted light and energy. "

Why signage in a lighting code?

It is not necessary to have signage in a lighting code, but it is important that lighting and the potential light pollution aspects of signs be addressed. DSSG put it in the POLC. Many Arizona jurisdictions also include signage in a lighting code. The sign portion of the MAG POLC can be easily removed and put into a sign code.

Why a lighting curfew?

A number of agencies have a lighting curfew, including: Cochise County, Coconino County, Cottonwood, Pima County, Sedona, Tucson, and Yavapai County.

According to the astronomy community:

1. Signs cause a substantial amount of light pollution (estimated 10 percent of the total).
2. Any jurisdiction can adjust or eliminate curfews.
3. Curfews already exist in many Arizona codes, and for many years.

A curfew is only in effect for non business hours.

Why a sign brightness of 100 nits?

Nit is defined as the standard unit used to measure the brightness of a surface, such as of a sign.

The MAG POLC includes a brightness of 100 nits. This is based on the typical maximum brightness seen in current (floodlit) billboards. The standard in some Arizona jurisdictions is 300 nits.

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According to the astronomy community:

1. The sign industry has not illuminated any floodlit billboard signs to 300 nits, based on an unpublished survey of 55 floodlit billboards measured in 2009 in the Phoenix metro area.
2. More than 90 percent of floodlighted billboards are below 100 nits.
3. Floodlit billboards illuminated at 100 nits are easily readable by most people.
4. At issue is a safety concern. Brighter signs (at three times existing levels) may have a negative impact on driver safety.

Why is sign color addressed in the code?

According to the astronomy community, to help reduce light pollution it is best to stay away from white background signs as they pollute the most. White background signs produce twenty times as much light pollution as an opaque-background sign, and about six times as much light pollution as a colored-background sign.