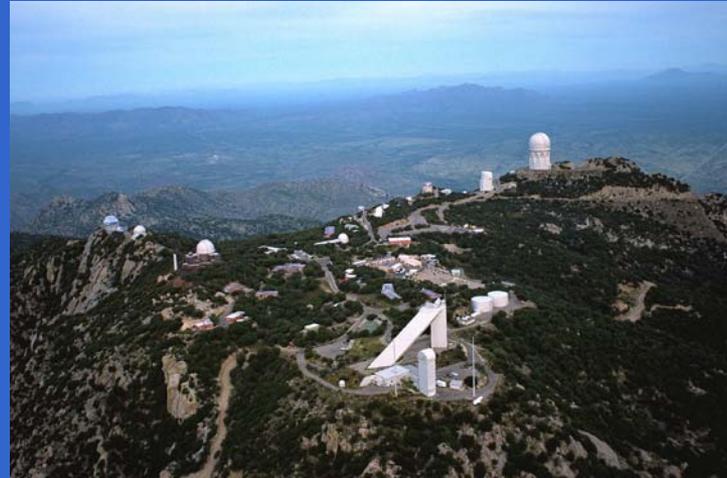


# MAG Dark Skies Stakeholders Group



Elizabeth Alvarez, Kitt Peak National Observatory/NOAO  
Dan Brocius, Smithsonian Institution, Whipple Observatory  
Chris Luginbuhl, U.S. Naval Observatory

The Arizona Arts, Sciences,  
and Technology Academy  
commissioned the  
University of Arizona's  
Eller College of Management

to study the economic  
impact of astronomy in  
Arizona.

FY '06

> \$250 Million  
annual economic impact  
&  
> \$1 Billion invested in  
capital facilities and land

Astronomy, Planetary Sciences,  
and Space Sciences Research Opportunities  
to Advance Arizona's Economic Growth



prepared by  
The Arizona Arts, Sciences and Technology Academy



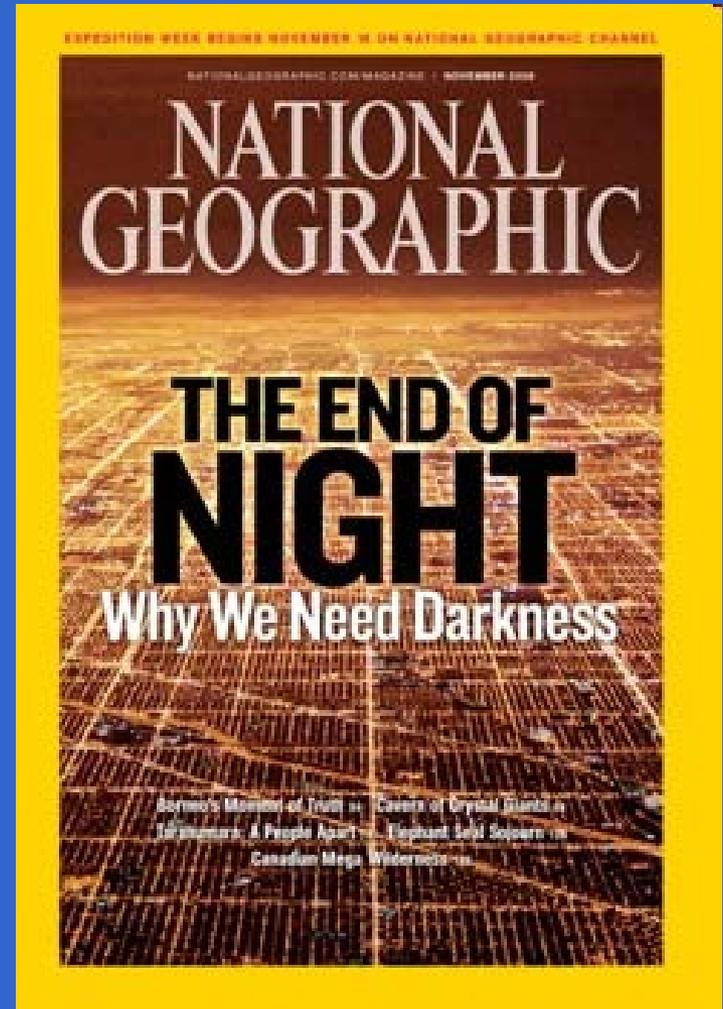


Phoenix/Casa Grande sky glow as seen from Kitt Peak National Obs.

**March 28, 2008.** (KPNO photo by J. Glaspey)

# Turning Out the Lights

The dangers of a bright night are becoming more apparent



# Purpose of a Lighting Code:

- Promote good lighting practice,
  - And to limit obtrusive lighting.
- Promote good business.
- Promote the community.
- Help everyone see better.
- Save energy. Save money.
- Preserve dark skies for all.

# Basics

- *What is the task.* Is light needed and why?
- *How much:* Use rational lighting levels.  
The amount needed for the task .  
Environmental Zones.
- *Where:* Directional control.
- *When:* Only use the light when it is needed.

# Keys to Quality Lighting

- See the effect, not the source!
- Shine the light down.
- No glare!
- Light only Where and When needed.
- Do Not over light.
- Use Energy Efficient sources.

# Good lighting!!!

- ★ Good for people
- ★ Good for neighborhoods
- ★ Good for businesses
- ★ Good for the economy
- ★ Good for astronomy