State of Florida
Public Service Commission
INTERNAL AFFAIRS AGENDA
Tuesday - March 02, 2010
Immediately Following Agenda Conference
Room 140 - Betty Easley Conference Center

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1. Approve February 9, 2010, Internal Affairs Meeting Minutes. (Attachment 1).
2. Presentation on Concrete and Lighter Color Horizontal Surfaces Reducing the Heat Island Effect and, in Turn, Energy Consumption by the Florida Concrete and Products Association. Presenter: Karl Watson, Jr. (Attachment 2).
3. Legislative Update (No Attachment).
4. Other matters, if any.

TD/sa

OUTSIDE PERSONS WISHING TO ADDRESS THE COMMISSION ON ANY OF THE AGENDAED ITEMS SHOULD CONTACT THE OFFICE OF THE EXECUTIVE DIRECTOR AT (850) 413-6068.

Attachment 1

State of Florida
Public Service Commission
INTERNAL AFFAIRS AGENDA
Tuesday - February 09, 2010
4:00 p.m. – 6:05 p.m.
Room 140 - Betty Easley Conference Center

COMMISSIONERS PRESENT: Chairman Argenziano
Commissioner Edgar
Commissioner Skop
Commissioner Klement
Commissioner Stevens

STAFF PARTICIPATING: Devlin, Hill, Kiser, Helton, Pennington, Shafer, Hunter

OTHERS PARTICIPATING: JR Kelly - Office of Public Counsel

The Florida Concrete Products Association's presentation has been deferred. Please note the following change in order of items to be heard:

1. Approve January 25, 2010, Internal Affairs Meeting Minutes.

   The minutes were approved.

   Commissioners participating: Argenziano, Edgar, Skop, Klement, Stevens

2. Discussion of Potential Legislative Proposals for the 2010 Session.

   The Commissioners approved the issues reviewed for the Legislative Proposal, with technical discretion to make changes discussed at the Internal Affairs Meeting.

   Commissioners participating: Argenziano, Edgar, Skop, Klement, Stevens

3. Draft Comments in Response to FCC Public Notice Regarding Universal Service Forbearance Petition of Partner Communications Cooperative. Approval is sought.

   The Commissioners approved the draft comments. Staff was authorized to make necessary grammatical corrections.

   Commissioners participating: Argenziano, Edgar, Skop, Klement, Stevens

4. Briefing on EPA rulemaking

Briefing by Tabitha Hunter. Staff Will keep the Commission updated.

Commissioners participating: Argenziano, Edgar, Skop, Klement, Stevens

5. Other matters if any.

No other matters were discussed.

URBAN HEAT ISLAND

Public Service Commission

January 25, 2010

Attachment 2

RESEARCH ON URBAN HEAT ISLAND HAS PROVEN THIS IS A FUNDAMENTAL ASPECT FOR CLIMATE CHANGE

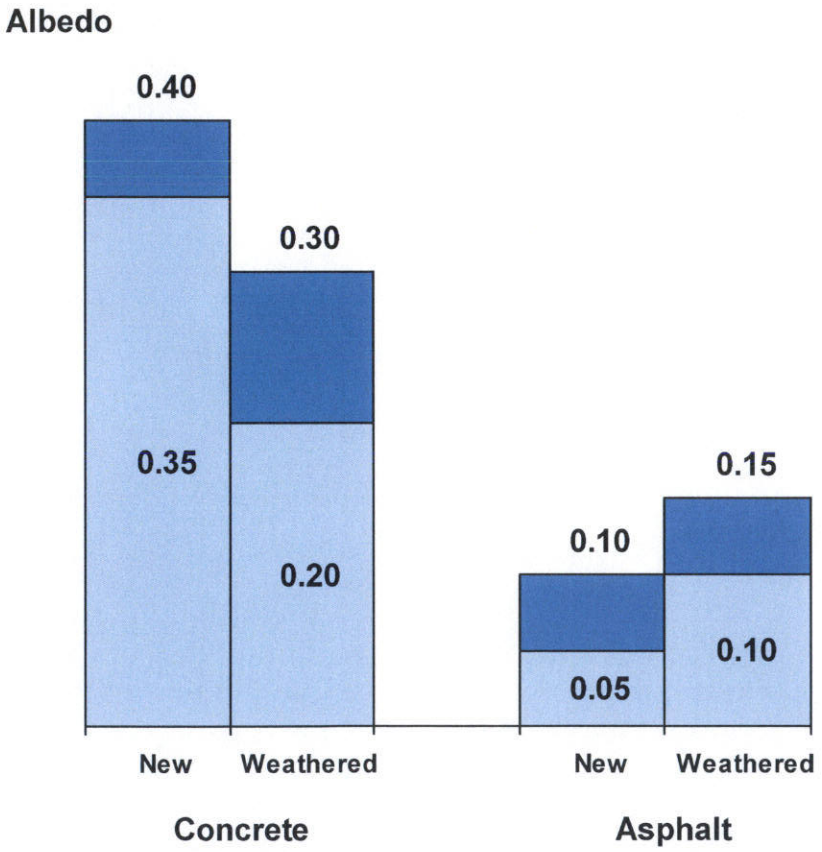
Definition	**Increase in ambient temperature that occurs in cities because paved areas and buildings absorb more heat from the sun than natural landscape**
Main Contributing Factor	**Solar reflectivity is the single most important factor contributing to heat island effect** • **This reflectivity is measured in Albedo, the degree to which a material reflects incoming solar radiation** • **It is a function of a surface's color (i.e. dark surfaces absorb radiation and release heat)** **"In urban areas, pavements and roofs constitute over 60% of urban surfaces (roofs 20-25%, pavements about 40%)."(1)**
Environmental Impact	• **Additional energy needed to cool warmer cities, emitting additional CO2** • **Greater frequency and severity of smog episodes**

Steven Chu(2) U. S. Secretary of Energy	**"If you look at all the buildings and make all the roofs white, and if you make the pavement a more concrete-type of color than a black-type of color, and you do this uniformly… It's the equivalent of reducing the carbon emissions due to all the cars in the world by 11 years"**

(1) NREL- "The Effect of Pavements' Temperatures on Air Temperatures in Large Cities"
(2) Financial Times, May 27, 2009

HIGHER ALBEDO VALUES PRODUCE GREATER REFLECTANCE THAT REDUCES THE HEAT ISLAND EFFECT

Average Albedo for Pavements[1]



Comments

Light colored pavements become darker as the road ages due to oil drips, tire marks, debris, etc

- **Studies suggest this is not a great concern as "residual reflectivity is still much greater than reflectivity from darker colored materials"[2]**

Dark colored pavements become lighter with time and increase their albedo

- **As asphaltic coating wears down, aggregates are exposed revealing a higher albedo surface**
- **By this time, IRI of pavement decreased to a point where resurfacing must be planned**

Color of aggregates can impact Albedo

(1) ACPA "Albedo: A measure of pavement surface reflectance" (LBNL, Levinson, Akbari)
(2) "Cooling Our Communities" USEPA
Source: PCA (Gajda, VanGeem); "Spectra Solar Reflectance of Various Materials" Berdahl, Bretz

HIGH ALBEDO PAVEMENTS COULD PROVIDE SIGNIFICANT ENVIRONMENTAL BENEFITS TO THE STATE OF FLORIDA

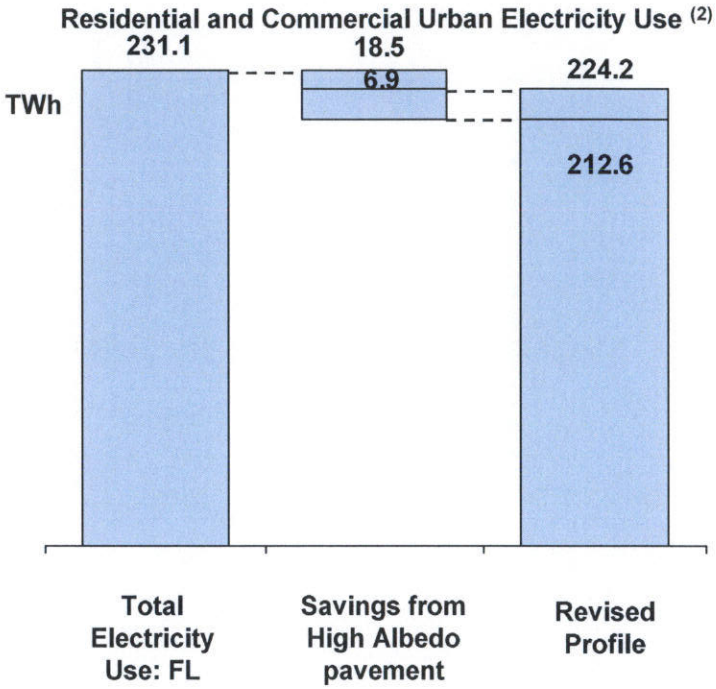
Pavements, Air Temperature, and Electricity Usage

Lawrence Berkeley National Laboratory:

The Effects of Pavement's Temperatures on Air Temperatures in Large Cities

- **Lawrence Berkeley National Laboratory conducted study measuring impact of pavement albedo on Urban Heat Island reductions**
- **Findings prove that concrete pavements would reduce energy consumption in LA by 100 MW or 71.8 MT CO2 annually**
- **Estimated that 3 – 8% of electricity in cities (pop. 100,000+) is used to offset the heat from the heat island effect**

Extrapolating to FL



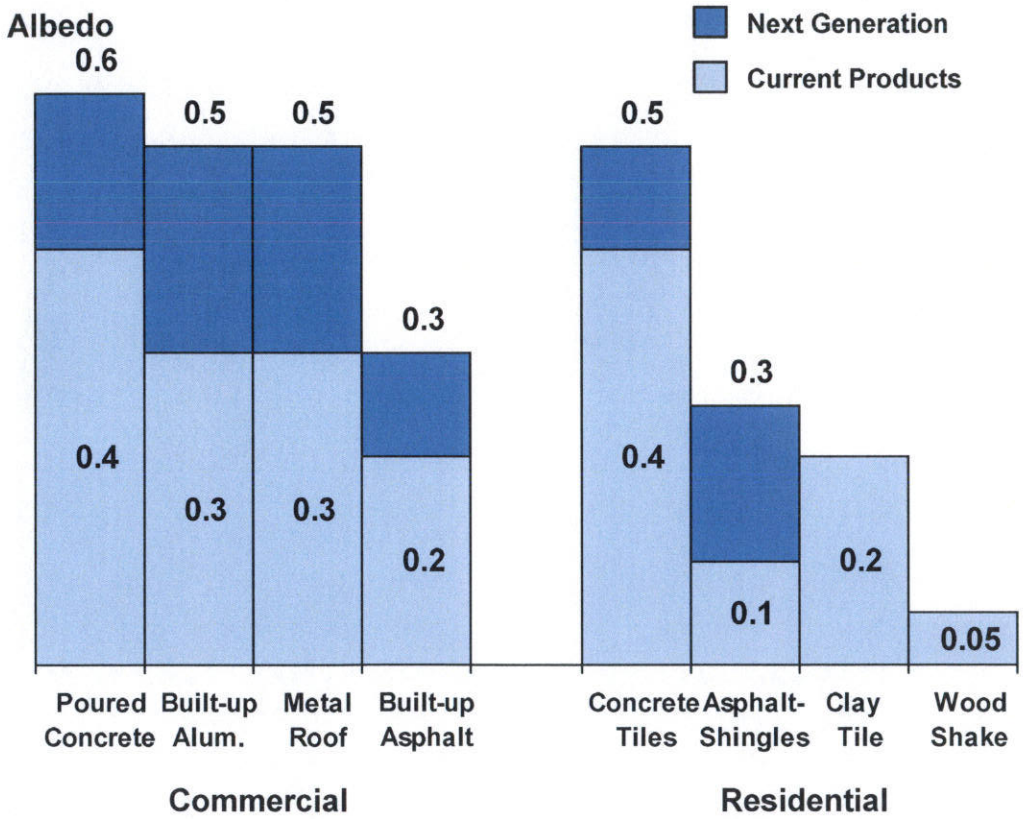
Concrete pavements could save Floridians 6.9 – 18.5 TWh (5.0 – 13.3 MMT CO2), which is equivalent to annual emissions of 1.0 M – 2.7 M vehicles (1)

- U.S.EPA – Energy Information Administration – 0.718 MT CO2/ MWh
- American Council for Energy Efficient Economy

MATERIALS CHOICE FOR ROOFS ALSO HAVE A SIGNIFICANT IMPACT ON URBAN HEAT ISLAND EFFECT

Estimates indicate roofs cover 20 – 25% of a city's surface

Average Albedo for Rooftops[1]



Comments

Commercial rooftops are characterized by expansive, flat roofs which reflect solar energy vertically

Residential rooftops have an angled profiles which reflect solar energy laterally into the atmosphere

Next Generation products are currently being developed to increase reflective properties while reducing the emittance of heat into the atmosphere

For every 1,000SF of rooftop, an increase in albedo of 0.04 will eliminate 10 tons of CO2 over the life of the building [3]

(1) LBNL-Production of Cool Concrete Tile & Asphalt Shingle Roofing Products
(2) U.S. EPA- Reducing Urban Heat Islands: A Compendium of Strategies
(3) LBNL, Akgari, et al 2009, Climate Change

HIGHLY REFLECTIVE ROOFTOPS ARE A PASSIVE SOLUTION THAT PROVIDES EXCEPTIONAL ENVIRONMENTAL BENEFITS

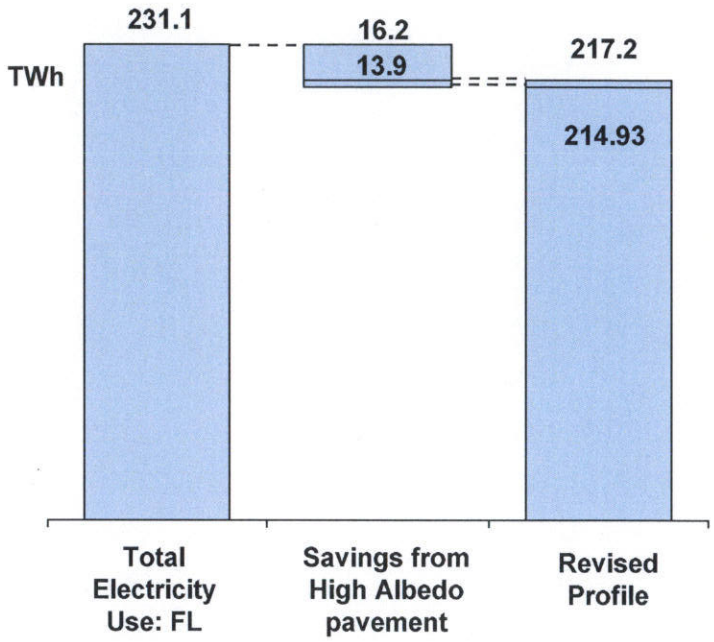
Roofs, Air Temperature, and Electricity Usage

Lawrence Berkeley National Laboratory:

Energy Savings for Heat Island Reduction Strategies

- **Study focused specifically on the benefits of reflective rooftops**
- **Estimates that cool roofs would lead to a CO2 reduction of 6 – 7% (2)**
- **Study estimated that widespread use of cool roofs could reduce the national peak demand for electricity by 6.2 to 7.2 GWh (2)**

Extrapolating to FL



Cool roofs could save Floridians 13.9 -16.2 TWh (9.9 – 12.8 MMT CO2), which is equivalent to annual emissions of 2.0 – 2.6 M vehicles

(1) NREL- "The Effect of Pavements' Temperatures on Air Temperatures in Large Cities"

(2) LBNL - Energy Savings for Heat Island Reduction Strategies.

(3) U.S.EPA – Energy Information Administration – 0.718 MT CO2/ MWh

(4) USDA – Economic Research Service

IMPORTANT FIRST STEP WAS TAKEN BY THE CITY OF MIAMI

Ordinance will apply to all new construction and to replacement of 50% of site hardscape

Miami Ordinance Requirements

Option to choose between following two alternatives:

	Comments
1 Provide any combination of following strategies for 50% of site hardscape	
• Shade from solar panels or roofing materials with solar reflectance (albedo) of at least 0.30	
• Shade from trees within 5 years of occupancy	No monitoring mechanism specified
• Paving materials with a solar reflectance of at least 0.30	
• Pervious pavement system	Lack of performance requirements
2 50% of parking spaces under cover with parking roof minimum solar reflectance (albedo) of 0.30	

Implications for Florida

State could adopt a similar piece of legislation

- Concerns such as monitoring mechanism for trees within 5 years or performance requirements for pervious pavements
- Ensure that spirit of the law cannot be bypassed

This would be a major contribution to the environment and quality of life

- Cool pavements could save 6.9 – 18.5 TWh (5.0 – 13.3 MMT CO2)
- Cool roofs could save 13.9 - 16.2 TWh (9.9 – 12.8 MMT CO2)
- These would equate to putting 3.0 – 5.3 M vehicles out of circulation