

## Climate Change Impacts Water Supply

1914  
Portage Glacier AK, 1914 - NOAA

2004  
Portage Glacier AK, 2004 - NOAA

- Glaciers are the world's largest supply of fresh drinking water.
- Loss of glaciers lead can lead to reduced water supplies, droughts, & rising sea levels.
- In Alaska, many glaciers are melting at an alarming rate
- Portage Glacier, near Anchorage, shown here, is no longer visible from the visitor center!

29

## Climate Change Impacts Water Supply

- Anchorage's water supply comes from Nearby Eklutna Lake (above)
- Eklutna Lake's water comes from Eklutna Glacier (right)
- Anchorage has contracted with Alaska Pacific University to study any changes to the glacier caused by climate change

20

## Today's Report

I. UPDATE FROM ANCHORAGE:  
Adapting to Climate Change -- Policy, Design, and Operations

- Energy impacts of climate change
- Water supply impacts
- City Adaptation: Winter City Design / Planning
  - 4. "Sustainable buildings"
  - 5. LED Lighting Project
  - 6. Social issues

II. A PROPOSAL FOR THE SUBCOMMITTEE  
Next steps.

30

## Some Winter City Design Principles

1. Emphasize denser communities for walkability
2. Reduced infrastructure costs
3. Stress energy efficiency and access to solar heat
4. Encourage celebration and connection to the specific natural environment of the community

— Lisa Morris, RIM Architects

Danaberg Community Center

Supporting sustainable design can result in even more progress towards b Winter Cities.

"Take the initiative... to pursue energy conservation... and... and encourage local residents..." — The New Declaration 2008

31

## Improving the Downtown Pedestrian Corridor

32

## Improving Access

Before After

33

## Ice-free Sidewalks

Before After

Images courtesy RIM

34

## Today's Report

I. UPDATE FROM ANCHORAGE:  
Adapting to Climate Change -- Policy, Design, and Operations

- Energy impacts of climate change
- Water supply impacts
- City Adaptation: Winter City Design / Planning
- City Adaptation: Sustainable Building Ordinance
  - 5. LED Lighting Project
  - 6. Social issues

II. A PROPOSAL FOR THE SUBCOMMITTEE  
Next steps.

35

## Anchorage Sustainable Building Ordinance

**AO2008-93**

- All MOA public building construction is required to be
  - LEED Certified after July 1, 2009
  - LEED Silver after July 1, 2012.
- Provides private sector incentives for LEED certified construction by permit fee reductions.

36



## What is LEED? Leadership in Energy & Environmental Design

A green building rating system developed by the US Green Building Council (USGBC). Sets standards for environmentally sustainable construction.

USGBC is member of World Green Building Council, WGBC.


LEED organization does not extend outside the US, but the rating system is internationally recognized and LEED criteria are at times used internationally.

- Certified buildings use resources more efficiently.
- Cost of design and construction is increased.

37

## LEED and Arctic Construction?



Some LEED scoring criteria possibly more difficult or less relevant in Arctic construction?, e.g.

- Windows – radiant heat loss
- Materials specifications
- Recycling building site waste
- Waste water drainage?

**MOA early experience - Cost**

MOA building cost added by LEED certification is 20-25%, compared with reported average across the country of less than 5%.

However green construction in the private sector is being significantly encouraged by the permit fee incentives.

38

## Anchorage LEED-Certified Project



J.L. Tower

39

## Anchorage LEED-Certified Project



J.L. Tower



Certified LEED Silver Core and Shell, 2011

Two major tenants have achieved LEED 1 Commercial Interiors, Silver Certification

40

## New "Green Buildings" in Anchorage



Mountain View Library, under construction, artist's rendering.



Museum expansion

Will be LEED certified

Not LEED but designed for energy efficiency

41

## New "Green Buildings" in Anchorage



Dena'ina Convention Center

Not LEED but designed for energy efficiency and is a green building

42

## Dena'ina building policies


**GREEN**

**DENA'INA'S NATURAL ATTRACTION**

The Dena'ina's green building policies are designed to ensure that the building is a natural attraction for the community. The building is designed to be a natural attraction for the community. The building is designed to be a natural attraction for the community.

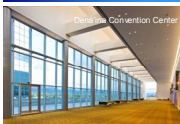
**Dena'ina's design aspects:**

- Maximize natural light
- Southern exposure
- Higher than normal insulation
- Programmed control systems
- State of the art HVAC
- Low energy lighting
- Sensor-operated lights
- Auto-shutoff faucets
- Dedicated recycling
- Biodegradable cleaning
- Eco-friendly soaps
- Recycled paper products
- Local materials
- "Locally grown" foods




43

## Design – Energy efficiency



Dena'ina Convention Center

Energy efficient controls



Higher than normal insulation levels in walls and ceiling

44

## Today's Report


**I. UPDATE FROM ANCHORAGE:**

Adapting to Climate Change – Policy, Design, and Operations

- Energy impacts of climate change
- Water supply impacts
- City Adaptation: Winter City Design / Planning
- City Adaptation: Sustainable Building Ordinance
- LED Lighting project
- 6. Social Issues

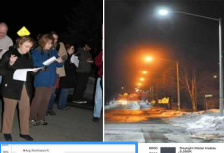
**II. A PROPOSAL FOR THE SUBCOMMITTEE**

Next steps.



45

### LED Street Lighting Project



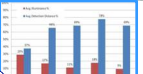
**Issues**

- Color temperature: white / yellow / blue
- Visibility
- Light quality
- Light pollution (to night sky)
- Light trespass (to residences)


**Methods**

- Roadway test installations
- Varying manufacturers, wattages, color temperatures
- Electronic sensors and public questionnaire data
- Measure energy use for 3 mo.

**Key Findings**




**LED Light/Bulb Savings**



46


### LED Street Lighting Update




- 3,500 of 4,000 LED roadway lights installed.
- Savings on electric usage is significant: 45-65% reduction in energy cost.
- The public is happy.
- No failures.
- LED lighting is ideal for cold climates. Lifetime expected to be 15-20 years.

47

### The view from my home




**Important Factors**

- Optimize Quality of light
- Minimize "Light pollution"
- Maximize Roadway visibility

48

### LED Street Lighting next steps



6th Avenue Parking Garage, 4:30AM

- Federal energy stimulus funding will be used for another 500 street lights and 50 trail lights.
- Additionally, all Municipal parking garages will be converted to LED. Garage lights are on at all times.

49

### Today's Report

I. UPDATE FROM ANCHORAGE:  
Adapting to Climate Change -- Policy, Design, and Operations

Energy impacts of climate change

Water supply impacts

City Adaptation: By ORDINANCE

City Adaptation: By DESIGN

LED Lighting project


An Issue of Concern

II. A PROPOSAL FOR THE SUBCOMMITTEE  
Next steps.

50

### Special concern of Mayor Sullivan: Homelessness, Chronic Public Intoxication

- Like other winter cities, Anchorage must address homelessness and public drunkenness
- About 3,000 people in Anchorage are considered "homeless"
- About 400 people are considered chronic inebriates or substance abusers, and use a higher proportion of services
- Sadly, Anchorage had over 12 fatalities of homeless people in 2009




51

### Special concern of Mayor Sullivan: Homelessness, Chronic Public Intoxication

- Mayor's goals -- "to reduce the death and violence rates to and among those who are currently homeless and have substance abuse issues, and to make our neighborhoods and parks a safe place for all those who work and reside in our city."
- This requires a long-term coordinated effort
- Mayor Sullivan formed a Homeless Leadership Team, led by the city's Department of Health & Human Services

Mayor Sullivan would like to know how other member cities address these issues.



DHHS

52

### Next steps for the subcommittee

I. UPDATE FROM ANCHORAGE:  
Adapting to Climate Change -- Policy, Design, and Operations

Energy impacts of climate change

Water supply impacts

City Adaptation: By ORDINANCE

City Adaptation: By DESIGN

LED Lighting project

Some City Management Issues

II. A PROPOSAL FOR THE SUBCOMMITTEE  
Next steps.

53

### Thank You Tānan



photo by USGS

54