Sustainability Efforts and Quarry geo Thermal Project
Sustainability and Geothermal Lake Plate Cooling
Topics:
• Nashville International Airport (BNA) overview
• Sustainability evolution at BNA
• RESULTS of sustainability efforts
About MNAA

• Created in the late ’60s, becoming one of the first airport authorities in the country
• Governed by 10-member Board of Commissioners
  • Appointed by Mayor of the Metropolitan Government of Nashville & Davidson County
• Self-funding
• No local tax dollars
• More than 290 MNAA employees
• Work with many partners under one roof, but as separate entities, including:
  • TSA, airlines, concessionaires and FAA
Economic Impact

- **BNA**: $3.5 billion in total economic value
  - 37,721 total employment
  - 11 million passengers per year
  - 390 daily flights; 50 nonstops

- **JWN**: $20.9 million in total economic value
  - 200 total employment
Secondary Catchment Area for BNA

• The secondary catchment area for BNA is a 100 mile radius that comprises Middle Tennessee, Southern Kentucky and Northern Alabama

• It serves a population base of 5.5 Million
Where We Fly
Recent Accolades

- One of the “7 Most Entertaining Airports in the World”
  - CNN
- “9 Craziest Things to Do at an Airport” for live music
  - Jetsetter.com
- 9th Best Domestic Airport
  - Condé Nast Traveler
- “Best Airports in the World” list
  - TheStreet
- “Top 10 Airport Amenities in the World”
  - Time Money
- “19 Airports You Wouldn’t Mind Being Stuck In”
  - BuzzFeed
Nashville On the Rise

A $2 Billion Renewal Takes Shape

Nashville’s Skyline Being Reshaped by Building Boom

More than 100 new projects, together valued at more than $2 billion, are underway or planned to start next year.

Nathan Morgan for The New York Times

Related:
Nashville’s Skyline Being Reshaped by Building Boom
Nashville On the Rise

Dirt Report: Major projects happening across Middle Tennessee
Nashville on the Rise

- Seattle Region (3.3 million)
- Denver Region (2.5 million)
- Portland (OR) Region (2.2 million)
- Austin Region, Charlotte Region (1.7 million)

1965: 750,000
2000: 1,450,000
2008: 1,700,000
2035: 2,600,000

10-County CRT Region
Other regions (MSA)
Nashville on the Rise
Why Sustainability for MNAA?

Key events
- Nashville area growth
- New Business Model
- Asset Management
  - AA Bankruptcy – 2012
- Sustainability Management Plan – October 2012
- Master Plan Update – October 2012
Integration of Sustainability

- Board of Commissioners and Executive Commitment
- Sustainability Committee – October 2012
- Strategic Planning and Sustainability Dept. – December 2013
Results

• New Airline Agreement
• Lighting Improvements
  • 6 million Kw-h
  • >$600,000 annually
• Solar covered EV charging stations
• Recycling, increase 49%
• $10 M stormwater treatment system improvements
Results

2015 Governor’s Environmental Stewardship Award for Excellence in Sustainable Performance
Results

Geothermal Lake Plate Cooling

Story:
• Quarry historical use
• Feasibility study 2009
• Water recharge analysis 2010
• Nashville 1000 year flood 2010
• Geothermal concept analysis 2011
• Pursuit of funding 2012-2014
• Design/build 2015-2016
Geothermal Lake Plate Cooling at BNA
Geothermal Lake Plate Cooling at BNA
Geothermal Lake Plate Cooling at BNA

**Contract Cost:**

$10,423,300

(Not-To-Exceed)

**Schedule:**

- **Contract Start:** May 2015
- **Contract End:** May 2016

**Funding Sources:**

- State: 40.80%
- MNAA: 34.20%
- Federal: 12.50%
- E.P.G.: 12.50%

(energy Performance Guarantee)

Also anticipate TVA reimbursement of up to $300,000
Geothermal Lake Plate Cooling at BNA

– Summer 2016 completion
– Largest geothermal lake place cooling system in North America
– 50 year design life
– Annual savings
  • 30 million gallons potable water
  • Energy savings: 1.3 million Kw-h, $430,000
  • 6,000 kilowatts of peak demand electricity
  • Increases chiller efficiency by more than 40%
Geothermal Lake Plate Cooling at BNA

Sustainable Design – long term thinking
– Trench installation of pipe versus tunnel
– 50 year design life
– Closed loop – maintain water levels
– Spare conduits
– Infrastructure pathway to future development
Geothermal Lake Plate Cooling at BNA

What LEED™ has done for building-scale sustainability, Envision™ aims to do for infrastructure: educate citizens and increase public awareness, provide a means to quantify sustainability in infrastructure, and facilitate the adoption of sustainable design for infrastructure.
Geothermal Lake Plate Cooling at BNA

www.flynashville.com
Geothermal Lake Plate Cooling at BNA
What’s Next

- CNG Bus Fleet and Filling Station
- Valet Express
- Alternative Energy Project
What’s Next

Take Aways:

• Sustainable culture in an organization can produce real results
• Creative thinking can repurpose old assets into beneficial use
Contact Us

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THANK YOU!!