

Thomas Jefferson was the first American person of letters to express a belief that human economic activity could cause large-scale changes in climate.

Jefferson recorded temperatures in Philadelphia in his journal on July 4, 1776:

- 6am: 68 °F
- 9am: 72.25 °F
- 1pm: 76 °F
- 9pm: 73.5 °F



Observations on the weather  
Philadelphia 1776

July	hour	Humidity	day	h. m.	A.M.	P.M.	
1.	9-0	84½	9	5-30	A.M.	75	
	7	82				77½	
2.	6	A.M.	78	6-30	P.M.	81	
	9-40	A.M.	78	9-45		78½	
	9	P.M.	74	10	8	A.M.	75
3.	5-30	A.M.	71½	9-15		76½	
	1-30	P.M.	74	2-8	P.M.	80	
	8-10		74	4-45		82	
4.	6	A.M.	68	6-30		81½	
	9		72½	9-30		78	
	1	P.M.	76	11	5-30	A.M.	74
	9		73½	8		76	
5.	6	A.M.	71½	9-40	P.M.	75	
	9		71	12	7	A.M.	72
	1	P.M.	74	8	50	P.M.	72
6.	5	A.M.	74	13	5-30	A.M.	71½
	9		75	14		74	
	9	P.M.	70				

The Dross, Fenwick, John Wilson, La Capricosa, St. Albans, Breda, Bunting, Capt. Anthon, San Carlos, St. Thomas, Mary's, Eddy, Shepard, George P. San Carlos, Des. Pedro, San Perry, Ast. Maria, Bona, Howland, San Bartolome, Bank Meeting, C. M. M. The Charity

# *Scan of Energy Efficiency and Climate Change Activities in New York 2010*



Joseph Rich  
FHWA-NY

Northern Transportation and Air Quality Summit  
August 24, 2010

1968 – Entered Bureau  
of Public Roads



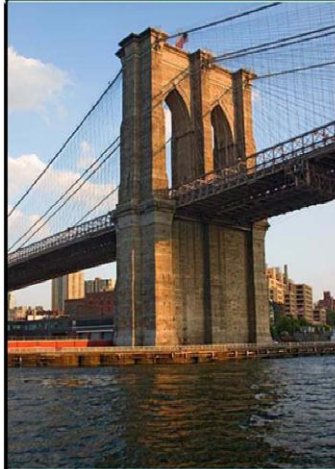
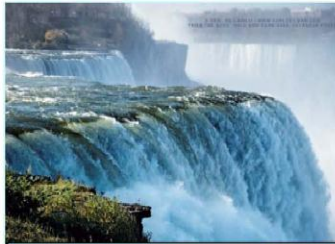
1967 Shelby Mustang GT-500



2001 Chevy Malibu

Today





## Scan of Energy Efficiency and Climate Change Activities

New York State  
May 2010

Report on the status of activities in New York related to transportation

Prepared by: FHWA – New York Division Office



## FHWA-NY Division Office 150 pages

- New York State
- NYSDOT
- NYSDEC
- NYSER&DA
- NYC
- MPOs

Recommendations  
Appendices

# FHWA Scans Received to Date

State	Length (pages)	Main Recommendation
Florida	11	Division to serve as a source for sharing best practices. Help with vulnerability assessments
Iowa	3	Discuss subject in normal reviews
Ohio	8	Division to host at least two separate training courses for State & MPOs related to climate change.
Montana	8	Support the state and local governments in developing land use plans that focus on Smart Growth principles, etc.
New York	150	Renewed Focus on Energy, Universal Principles, Common Ground, Provide expanded information for FHWA
Washington	2	Continue existing activity



# Anthropogenic (man-made) Global Warming Theory (AGW)

Assertion: The climate is changing faster than normal

Cause: Mankind's use of fossil fuels that add GHGs to the atmosphere (primarily CO<sub>2</sub>)

Impact: The global temperature is likely to rise and the climate to change in harmful ways.

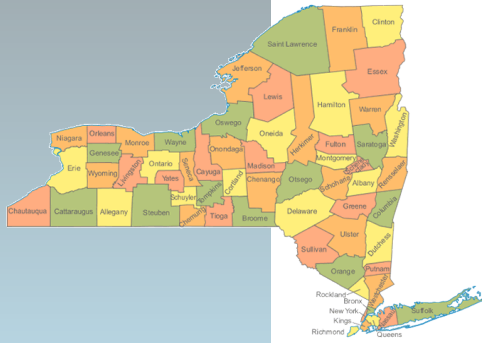
## Challenges

- ▶ Not 100% persuaded about all aspects of AGW theory, so...
- ▶ Delicate position re: FHWA HQ's and NYS's official policy
- ▶ Little transportation planning underway specific to this issue among MPOs & NYSDOT
- ▶ Despite constant flow of info, many planners feel uneasy about proper response to the issue
- ▶ Public is becoming skeptical
- ▶ How to advance FHWA program in a positive manner?

## Results

- ▶ Appreciation of level of effort underway in NY
- ▶ Supported FHWA stance while recognizing scientific disagreement
- ▶ Program recommendations to improve effectiveness of GHG reduction efforts
- ▶ Planning recommendations from MPO Directors involving universal truths, uncertainty, common ground
- ▶ Appendices contain material on the science that can enrich FHWA field's knowledge base

# New York State Energy Facts



- ▶ NY is 4<sup>th</sup> largest energy consuming state, but...
- ▶ 2<sup>nd</sup> most energy-efficient state on a per-capita basis.
- ▶ Transportation net energy = 39% of total energy demand (44% nationally)
- ▶ NY's reliance on foreign oil as proportion of total petroleum is 88% (65% nationally)
- ▶ 21% of NY electricity today comes from existing renewables

# NY Gubernatorial GHG Mandates



George Pataki



Elliot Spitzer



David Paterson



- **“80 by 50” goal**: By 2050, the State of New York should reduce current GHG emissions from all sources within the State eighty percent (80%) below levels emitted in 1990.
- **Climate Action Council** was created.
- **Climate Action Plan** is required, with the draft due by September 30, 2010 (final Jan. 2011).



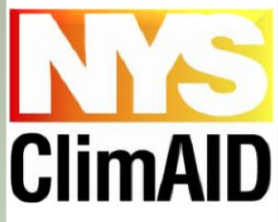
# New York State Climate Action Council



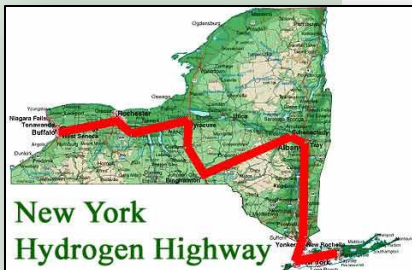
- Regional Greenhouse Gas Initiative (RGGI)
- State Energy Plan (2009)
- Climate Action Plan
- Alternative Fuel Vehicles Programs



# NYS Activities



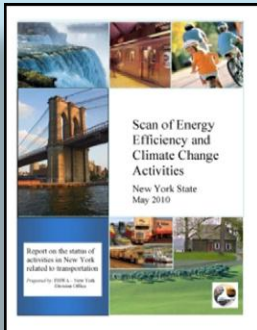
- ▶ Sea Level Rise Task Force
- ▶ Renewable Energy Portfolio Standard
- ▶ Green Procurement & Sustainability Program
- ▶ NYS Hydrogen Roadmap
- ▶ Clean Fueled Vehicle Council
- ▶ *ClimAID*
- ▶ NYSDOT *GreenLITES* Program
- ▶ NYSDOT “*Climate Change/Energy Efficiency*” team



# FHWA–NY Scan Contents

## Part I: Existing & Planned Activities

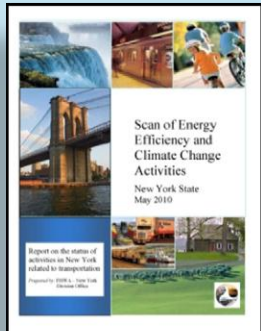
- Introduction – Why This Scan?
- Chapter 1: NYS' Position on Climate Change/Energy
- Chapter 2: State Energy Plan
- Chapter 3: NYSDEC
- Chapter 4: NYSERDA
- Chapter 5: NYSDOT
- Chapters 6–9: Planning Activity of NYSDOT, MPOs, NYC
- Chapter 10: Energy & GHG Analyses in TIPs and Plans



# FHWA–NY Scan Contents

## Part II: Recommendations

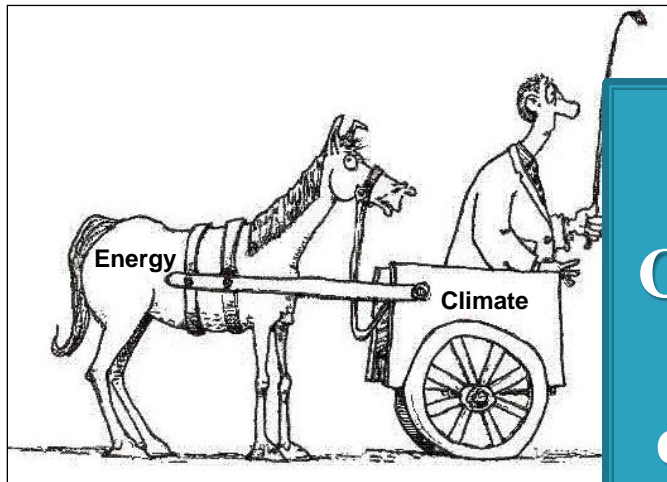
- Chapter 11: **Renewed Emphasis on Energy**
- Chapter 12: **Consider Universal Truths & Find Common Ground**
  
- Appendices: **Expanded Information on the Science to FHWA field offices**





Chapter 11

## A Renewed Focus on Energy



Question:  
Could our current approach to climate change and energy be a case of the cart semantically leading the horse?



## Chapter 11

# **A Renewed Focus on Energy**



*Only 34% of the public believe in Anthropogenic Global Warming*

*Rasmussen Reports,  
December 2009*

# Recommendations



▶ **Reinvigorated emphasis on energy and conservation** activity as worthwhile on their merits:

- National Security
- Air Quality
- Stewardship
- More \$\$\$ in your pocket
- And, it will reduce GHG emissions

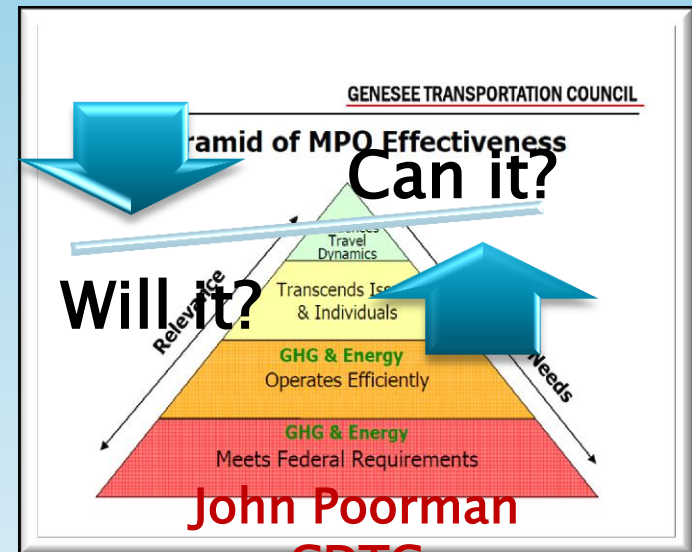


# Coming Together

Chapter 12

## Universal Truths & Finding Common Ground

### Find Common Ground



**John Poorman**

**CDTC**

**Richard Perrin**

**GTC**

# Appendices

A. The Fog of Climate Science

B. Temperature Forecasting

C. Pitfalls in Discussion



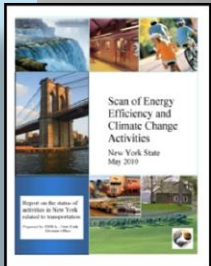
## Appendix A: The Fog of Climate Science

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- The AGW theory is the prevailing theory today.
- There is legitimate concern

Acknowledgements  
we need to make...

- This issue is highly charged with emotion.
- Most people on both sides of the issue have nothing but the best of intentions.



## Clarifying Issues



**This is scientifically  
as profound as  
stating:**

“There is no longer any  
significant disagreement  
in the scientific  
community that the  
greenhouse effect is  
real !!!”

# Clarifying Issues



**This is scientifically  
as profound as  
stating:**

**“AQ planners are  
sharp dressers.”**



ALL scientists agree that the Greenhouse Effect is real and necessary for life.

---

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Issues:

1. Is the earth's climate significantly changing?
2. If so, are we (humans) largely responsible for it by our GHG (CO<sub>2</sub>) emissions?
3. Will the associated changes be seriously detrimental?
4. How many resources (\$\$\$) are we willing to spend based upon the forecasts?

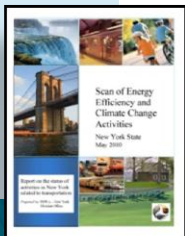


## Appendix A: The Fog of Climate Science

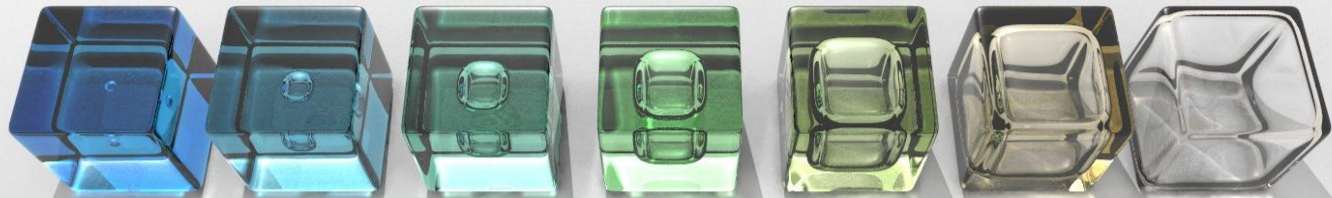
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- Is Climate Change the same thing as Global Warming?
- Is the Earth getting Warmer?
- Do GHGs act like a blanket?
- Is CO<sub>2</sub> a Pollutant?
- Does an Increase in CO<sub>2</sub> always lead to a Warming of temperature?
- Will Warming mean more tropical diseases?
- Will Warming result in more hurricanes?
- Will Melting of Arctic Ocean ice raise sea levels?



## General Circulation Models

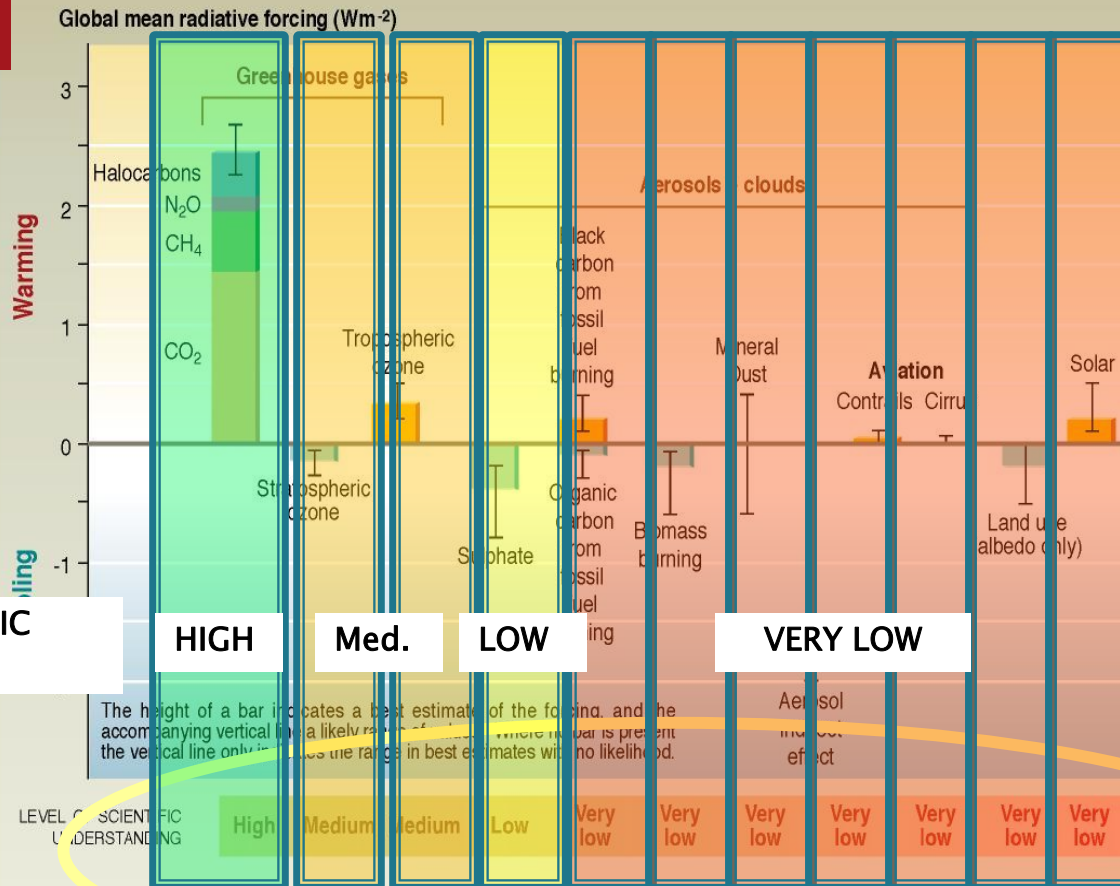


### Appendix B: Temperature Forecasting

- Like
  - ✓
  - ✓
  - ✓
- If the script or data have uncertainties, the computer adds nothing to the forecast, but it does produce uncertain answers at a very high speed.**
- ... out within an acceptable range.

# "Forcings"

Anthropogenic and natural forcing of the climate for the year 2000, relative to 1750



Clarifying the Issues

LEVEL OF SCIENTIFIC UNDERSTANDING

High

Med.

Low

VERY LOW

LEVEL OF SCIENTIFIC UNDERSTANDING

High

Medium

Medium

Low

Very low

Very low

Very low

Very low

Very low

Very low

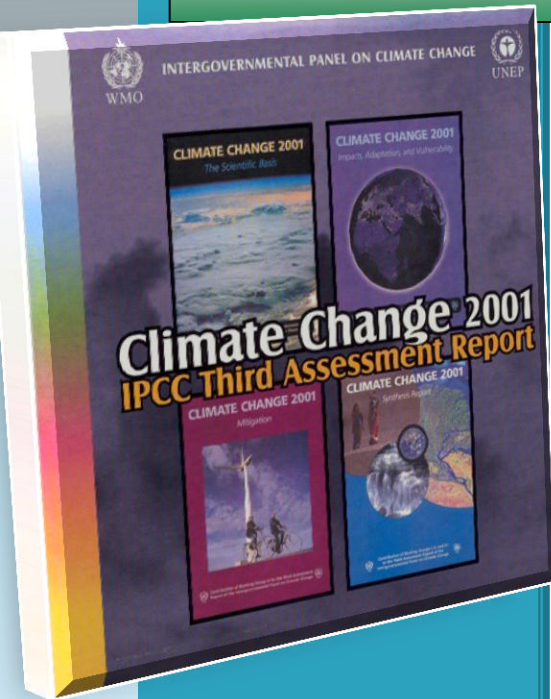
Very low

Very low

Very low

SYR - FIGURE 2-2

# Forecasting



“ In climate research and modeling, we should recognize that we are dealing with a coupled non-linear chaotic system, and therefore that **the long-term prediction of future climate states is not possible.**”

IPCC, “The Scientific Basis”, Climate Change 2001: IPCC Third Assessment Report, 774

# Appendix C: Avoiding Common Pitfalls

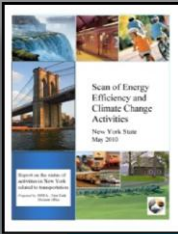


## Common Pitfalls during discussions

- ✓ **Ambiguous Statements of proof**
- ✓ **Not the Whole Story**
- ✓ **Misrepresentations that have become Common Belief**
- ✓ **Premature Claims of Consensus**
- ✓ **The Experts Say ...**
- ✓ **We Should Do Something Just to be Safe**

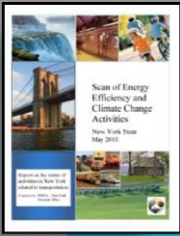


# Recommendations

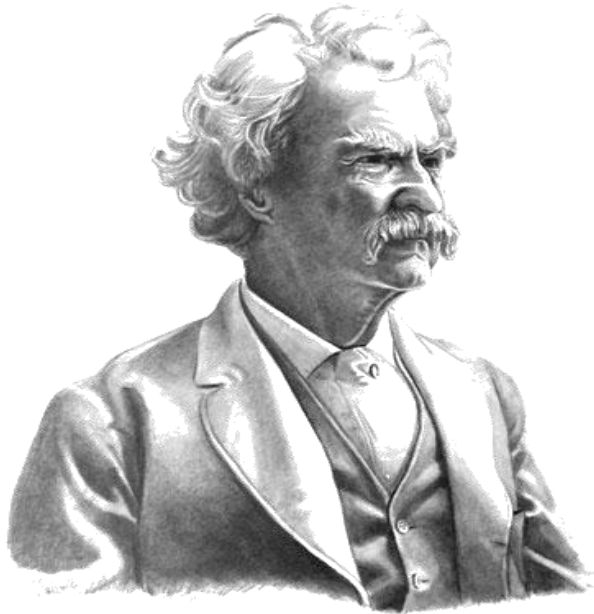


- ▶ **Reinvigorated emphasis on energy** and conservation activity as worthwhile on their merits
- ▶ **Recognize the universal truths** regarding human nature which influence the effectiveness of strategies developed in the planning process.
- ▶ **Find common ground** in order to do the right thing. Energy, security and the economy are common ground issues.

# Recommendations



- ▶ **Expand the scope of information available** within the agency on the fundamental concepts on climate science  
Knowing the strengths and weaknesses of a discipline and the range of positions thereon empowers individuals to better participate in discussions with our partners and with the public.



*“Do the right thing. You’ll  
gratify your friends and  
astonish the rest.”*

-- Mark Twain



U.S. Department of Transportation  
**Federal Highway Administration**

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