

# AIWG – Urban Issues Subgroup

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# Urban Issues

- Guidance for Urban Option Inputs
- Model Reformulation
- Met Data Issues for Urban Sources
- Other Issues

# Guidance for Urban Option Inputs

- Criteria for Determining Urban/Rural Option – currently AUER technique
- Input population in the urban option – how to estimate population?
- Input Surface Roughness in the urban option - using a value other than 1m may become a “non-regulatory” option.

# Model Reformulation

- Develop a Delta-T approach rather than the current population based heat flux calculation (possibly a pre-processing type of approach)
- Establish a critical Monin-Obukhov Length to “turn off” the nighttime urban effect because model sometimes overstates the urban effect

# Met Data Issues for Urban Sources

- Guidance should be refined, especially for use of urban met data, and on-site met data in urban areas
- Adjustments may be necessary to surface met parameters for urban applications – Issue for Surface Characteristics Subgroup

# Other Issues

- Develop an approach for dealing with dispersion from sources emitting a significant amount of anthropogenic heat and not located at a population center (e.g. steel plant)

# Priorities

- Our focus will be to develop and refine guidance for sources in urban areas
- Guidance for the population value to be input to AERMOD is at the top of our list
- Developing a Delta-T approach for heat flux (related to population issue)

# Next Steps

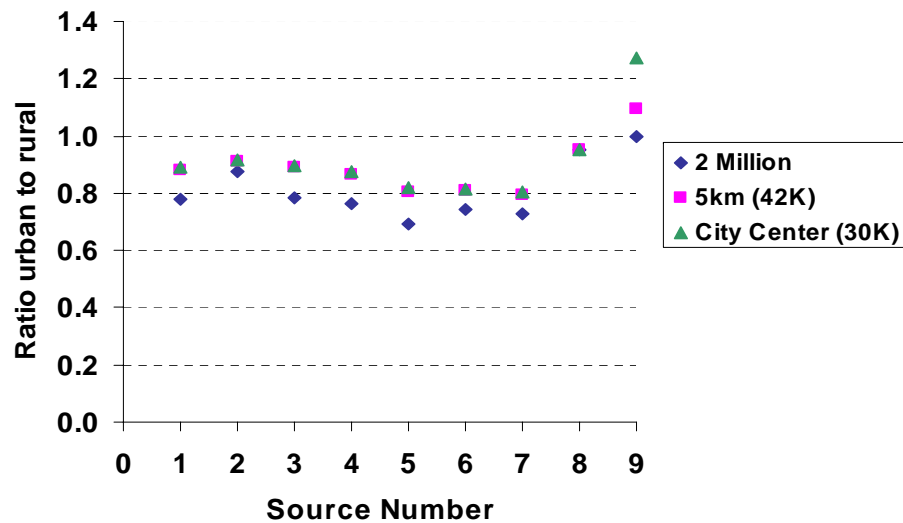
- Review urban sensitivity analyses already performed
- Additional runs may be necessary especially multi-source analyses

# Summary of Results to Date

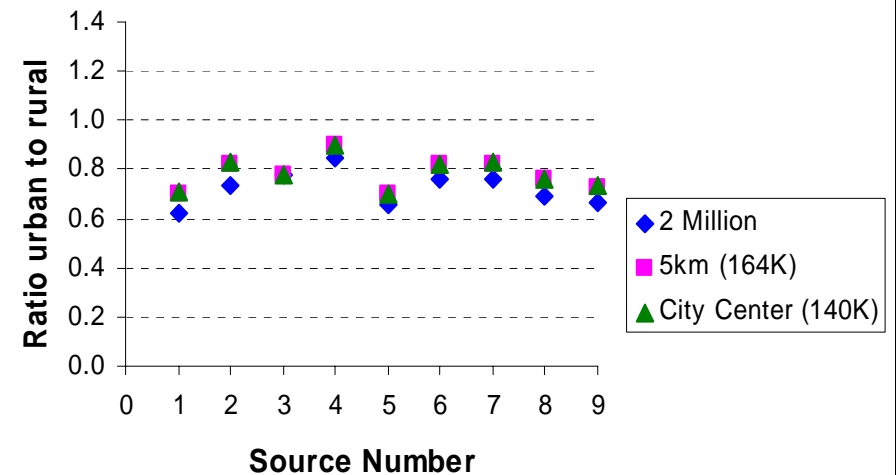
- The urban option of AERMOD has little effect in downwash dominated cases.
- For non-downwash cases, the effect of urban option is to reduce impacts relative to rural cases.
- There is a model artifact for low population and higher source heights.
- Ground-level source sensitivity to urban roughness greater than sensitivity to population

# Urban Population Issue - NYSDEC

Jamestown 2000 meteorology  
24 hour maximum impacts, no downwash



Syracuse 1992 Meteorology  
24 hour maximum impacts, no downwash



# Urban Roughness Length Issue

## - Roger Brode

### Ratios of H1H 1-hour Concentrations to Default Z0=1.0m

Population	Source	Z0=0.5m	Z0=0.8m	Z0=1.0m	Z0=1.5m	Z0=2.0m
500,000	NB000M	1.514	1.140	1.000	0.794	0.678
1,000,000	NB000M	1.512	1.139	1.000	0.795	0.722
2,000,000	NB000M	1.510	1.139	1.000	0.796	0.796
5,000,000	NB000M	1.507	1.138	1.000	0.905	0.905
500,000	BY010M	0.619	0.872	1.000	1.347	1.501
1,000,000	BY010M	0.620	0.875	1.000	1.347	1.494
2,000,000	BY010M	0.621	0.877	1.000	1.347	1.489
5,000,000	BY010M	0.621	0.879	1.000	1.346	1.484