

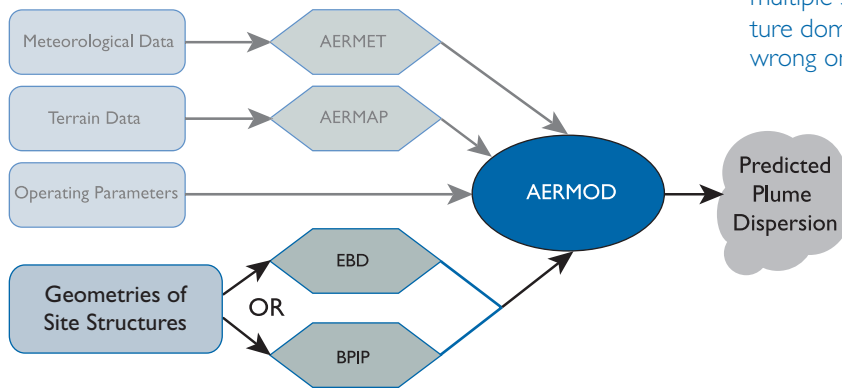
# Beyond BPIP: Better Plume Dispersion Predictions

## What is BPIP?

The Building Profile Input Program (BPIP) is software that turns site structure geometries into data that AERMOD uses—along with other relevant data—to predict plume dispersion.

AERMOD results must be within the EPA's regulatory limits for pollution concentrations.

The dispersion modeling process:



## The problems with BPIP

- **BPIP cannot account for complex geometry.** Unless the dominant building is solid, rectangular, and perpendicular to the flow, BPIP is not accurate. BPIP misjudges lattice, tiered, cylindrical, and complex structures.
- **BPIP can merge separate structures.** If BPIP addresses more than one building for a single site, the buildings are often “averaged” into a single structure, which can produce an inaccurate dispersion prediction.
- **BPIP can pick the wrong dominant building.** For sites with multiple structures, AERMOD needs to know which structure dominates the exhaust behavior: BPIP can choose the wrong one.

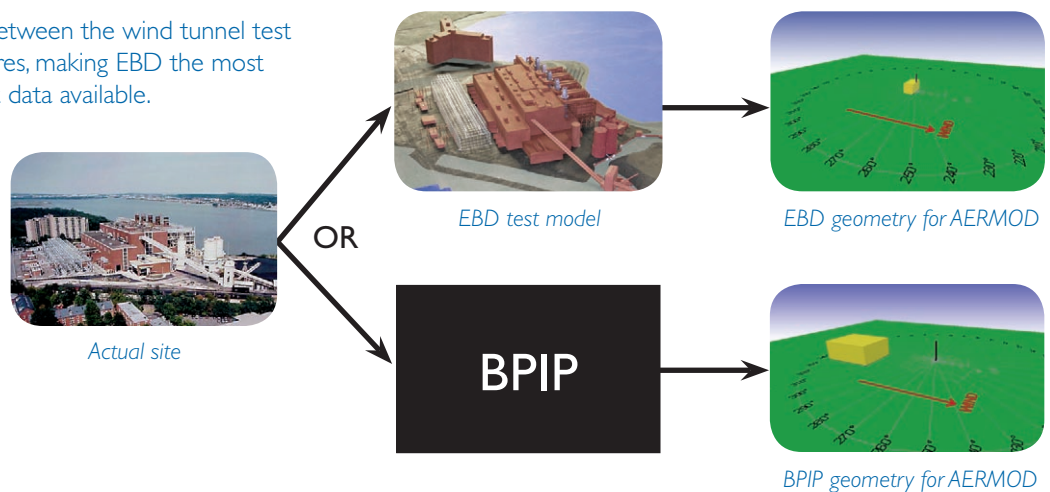
## The alternative: EBD

Equivalent Building Dimensions (EBD) replace BPIP for producing AERMOD-compatible building geometry data.

To account for the effects of terrain, complex geometry, and surrounding structures, the EBD process includes wind tunnel testing of the subject building, the surrounding structures, and the local terrain to reproduce the actual plume dispersion at the site.

EBD provide the closest match between the wind tunnel test results and the actual site structures, making EBD the most accurate building dimension input data available.

*Plume dispersion predictions are very sensitive to building geometry, so accuracy is essential.*



## The benefits of EBD

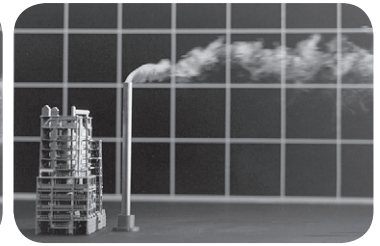
- **Increased accuracy.** EBD replicate the actual site dispersion characteristics to produce building dimension data for AERMOD that is significantly more accurate than BPIP.
- **Reduced risk.** Accurate dispersion modeling helps prevent complaints, remedial construction costs, and air quality violations.
- **Improved planning and design.** EBD help optimize emission control and minimize stack heights.
- **Accepted by the EPA.** EPA authorities have recognized the EBD process as a viable replacement for BPIP.

*EBD can help prevent air quality violations and the associated costs of remedial construction and potential litigation.*

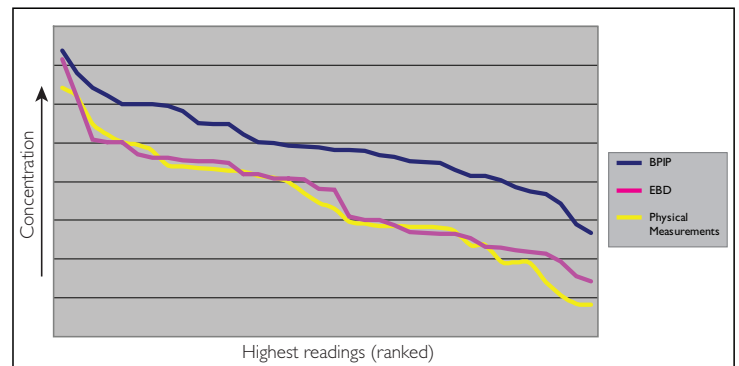
BPIP



EBD



*Wind tunnel tests show significant differences between BPIP and EBD.*



*EBD matches the physical measurements much more closely than BPIP*

## About CPP

For more than 20 years, CPP engineers have researched, developed, and applied state-of-the-art testing and analysis techniques to plume behavior, exhaust and intake design, and pollutant dispersion issues for clients around the world.

CPP also provides services addressing indoor airflow, pedestrian-level wind and pollution, wind loads on cladding and structural frames, small wind-turbine testing and wind farm siting.



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PETERKA  
PETERSEN

WIND ENGINEERING AND AIR QUALITY CONSULTANTS

1415 Blue Spruce Drive, Suite 3  
Fort Collins, Colorado, USA 80524  
Tel: 1 970 221 3371 Fax: 1 970 221 3124  
info@cppwind.com www.cppwind.com