C3: The Harmonized Emissions Analysis Tool
An International Quantification Resource

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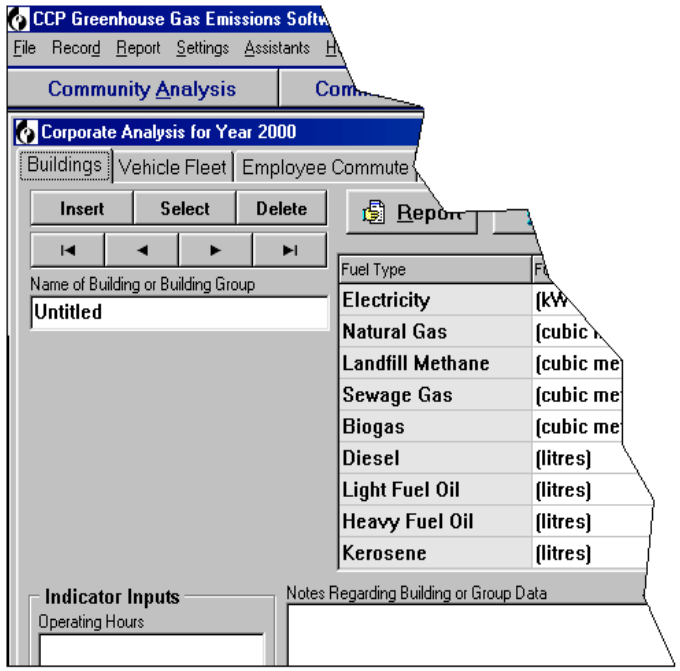
HEAT
HARMONIZED EMISSIONS ANALYSIS TOOL

Session Objectives

- Introduce the HEAT Software: What is it?
- Live demonstration of HEAT's features and functionality: How to use it.
- Interactive discussion: Your needs, and feedback.

Existing International Software

CCP Software



- Has been evolving since 1993
- 450+ users internationally
- In use in ~8 Countries

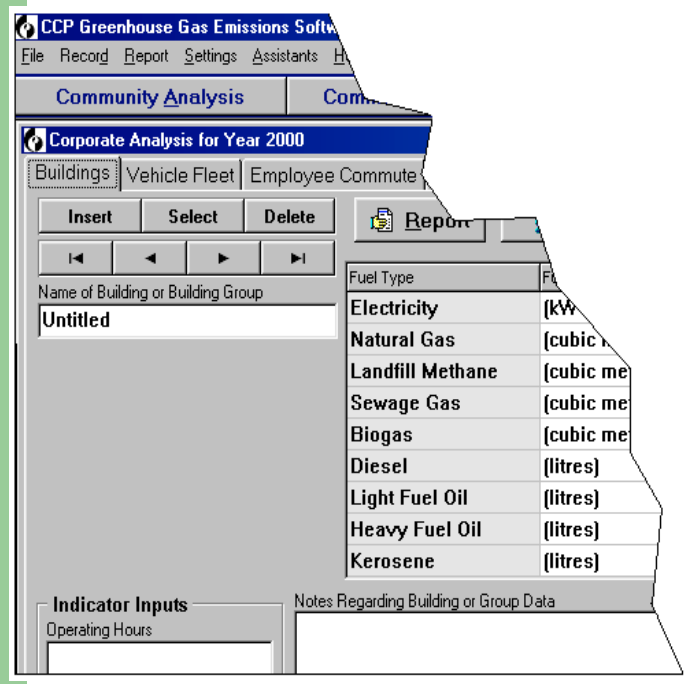
Tool to Support the 5 - Milestones

- Emission inventory and forecast
- Set reduction target
- Develop a quantified action plan
- Implement action plan
- Monitor and verify results

CCP software supports the first three milestones

Limitations of existing software…

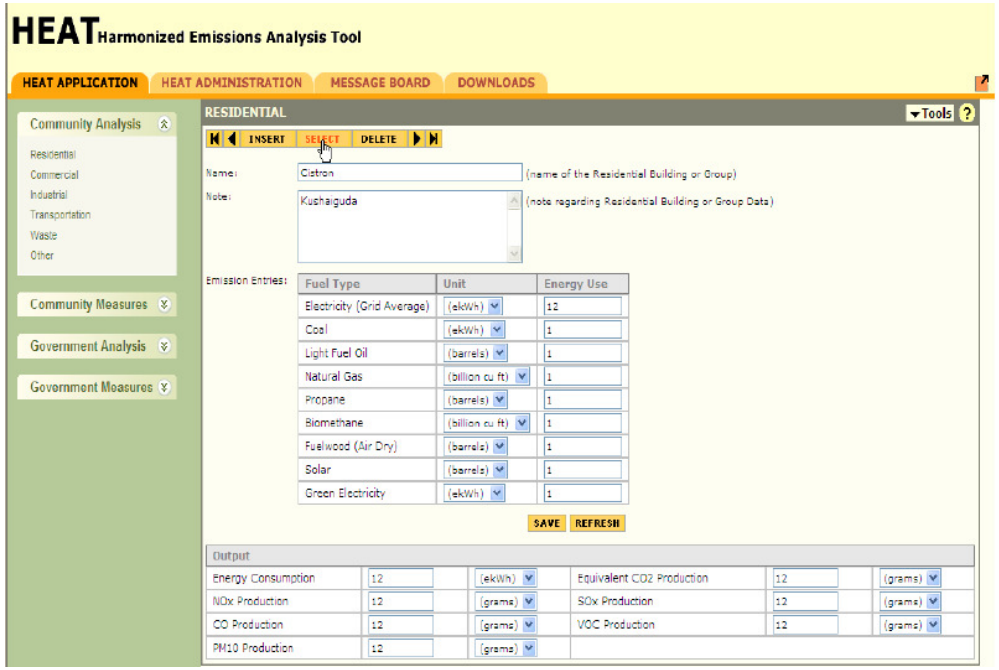
CCP Software



- Only quantifies GHGs
- Only windows based
- Only in English & Spanish
- Separate versions for countries – hard to manage
- Difficult and expensive to maintain and upgrade
- Not available over the internet
- Limited ability for networking

Introducing HEAT!

The Harmonized Emissions Analysis Tool



"Towards harmonized air emissions and climate action planning"

ICLEI Local Governments for Sustainability

USAID

What is HEAT? HEAT will be a…

- User account based,
- Multinational,
- Multi-lingual,
- Internet based tool for storing, tracking, and reporting emissions and reductions of both GHGs and CAPs

- That automatically updates to reflect the latest research and emissions factors

HEAT Calculates and Tracks

- Greenhouse Gases
  - Carbon Dioxide (CO_2)
  - Methane (CH_4)
  - Nitrous Oxide (N_2O)
- Criteria Air Pollutants
  - NO_X
  - SO_X
  - CO
  - Volatile Organic Compounds (VOC)
  - Particulate Matter (PM_{10})

Other emissions types can be manually entered

Capability of the HEAT Software

- Conduct an emissions inventory
- Set a emissions reduction targets
- Forecast predicted emissions in future years under a “business-as-usual” scenario (i.e. the target year)
- Quantify the impact of reduction measures on emissions, energy use and cost
- Track changes over time and progress towards meeting targets

Stand-alone calculator or use modules together to create a complete emissions reduction plan

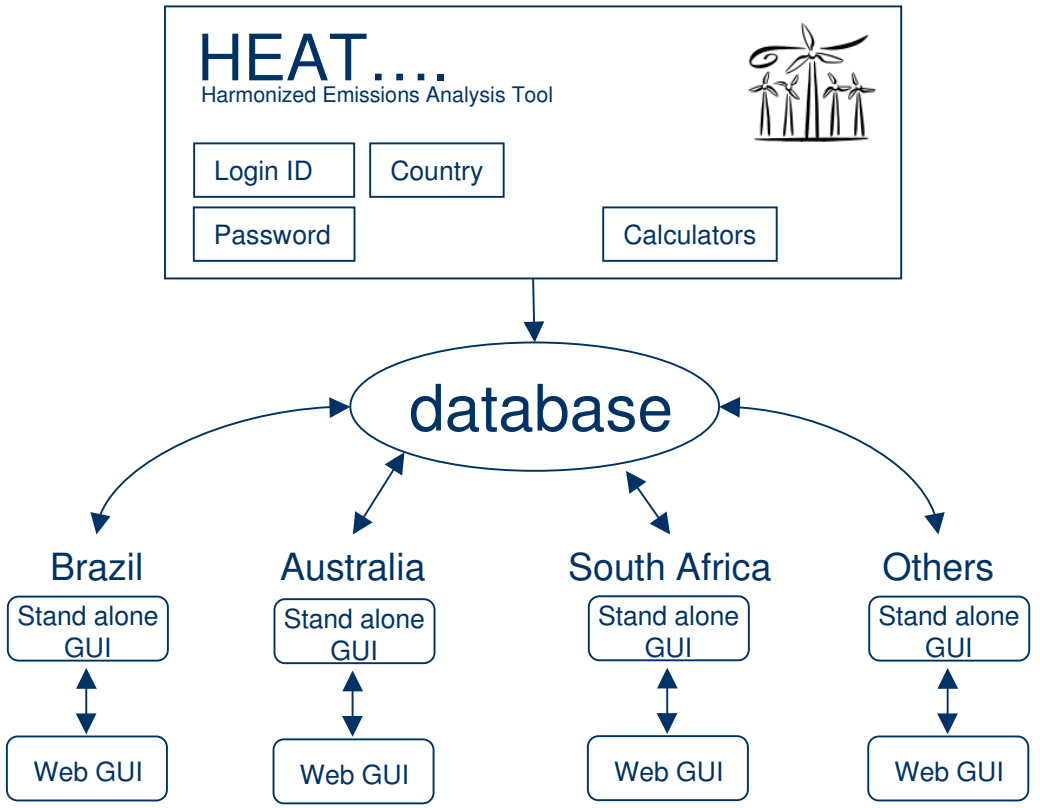
Multi-National Data Repository

- Multi-jurisdictional information compiled in one location
- International data queries and research potential
- County level reporting
  - Benchmarking
- Import results from other analyses

HEAT will not be…

- Air quality/dispersion model
- An emissions factor model
- An air quality management (AQM) tool

HEAT Design Layout



Internet Portal

On-line Database

Local Browser Based
Java Script

HEAT Calculators Compute…

- Emissions Sources

  Community
  - Buildings / Facilites
  - Fleet
  - Transportation / Commute

  Government
  - Waste Generation
  - Streetlights and Signals

- Emissions Mitigation Actions
  - Energy efficiency
  - Landfill gas use
  - Fleet fuel switch
  - Installing renewable energy
  - Waste Reduction / Recycling

- Many others…..

Calculators: Quantification Tools

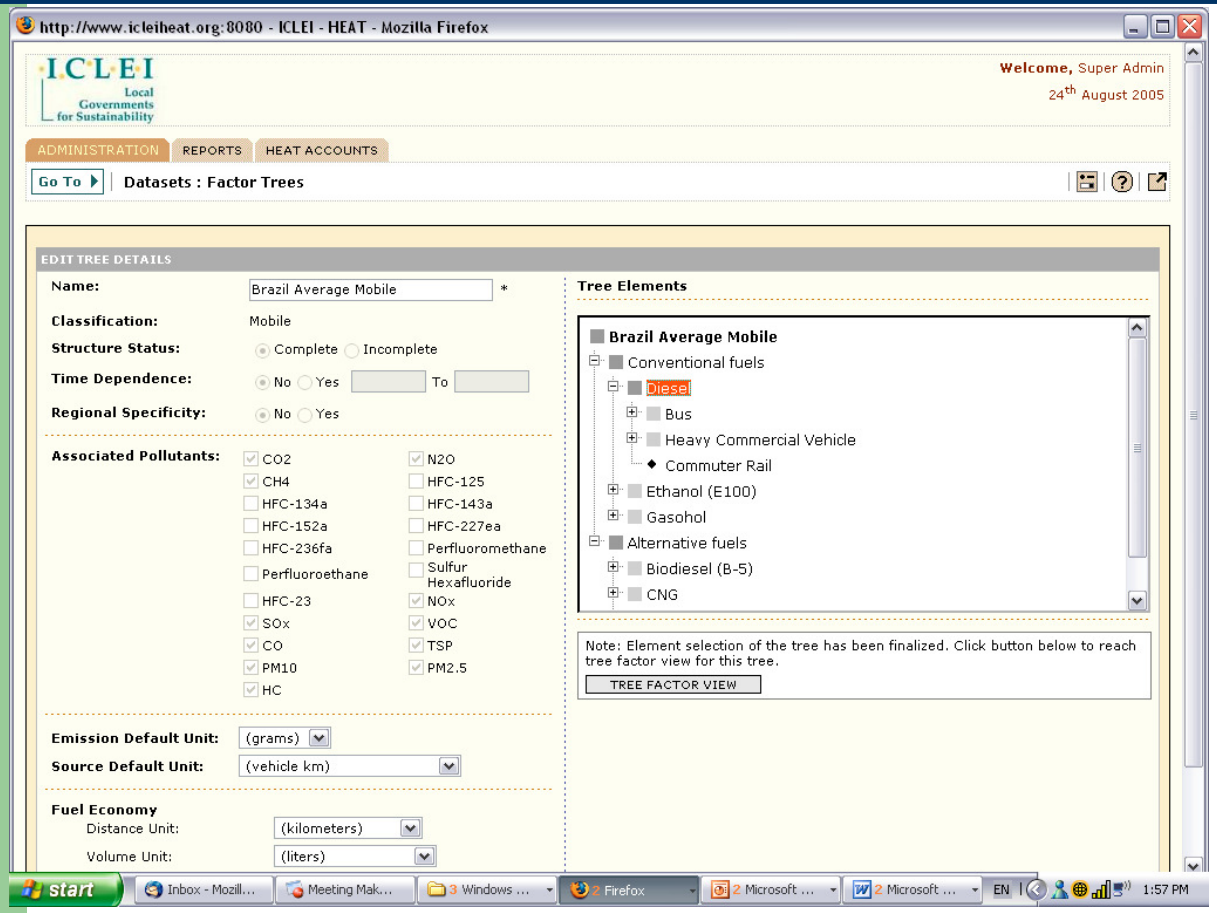
- Basic Algorithm for Inventory:

  Emissions = EF x Activity

  Where,

  - EF is the emission factor
  - Activity is energy use, waste, and transportation data supplied by user, and

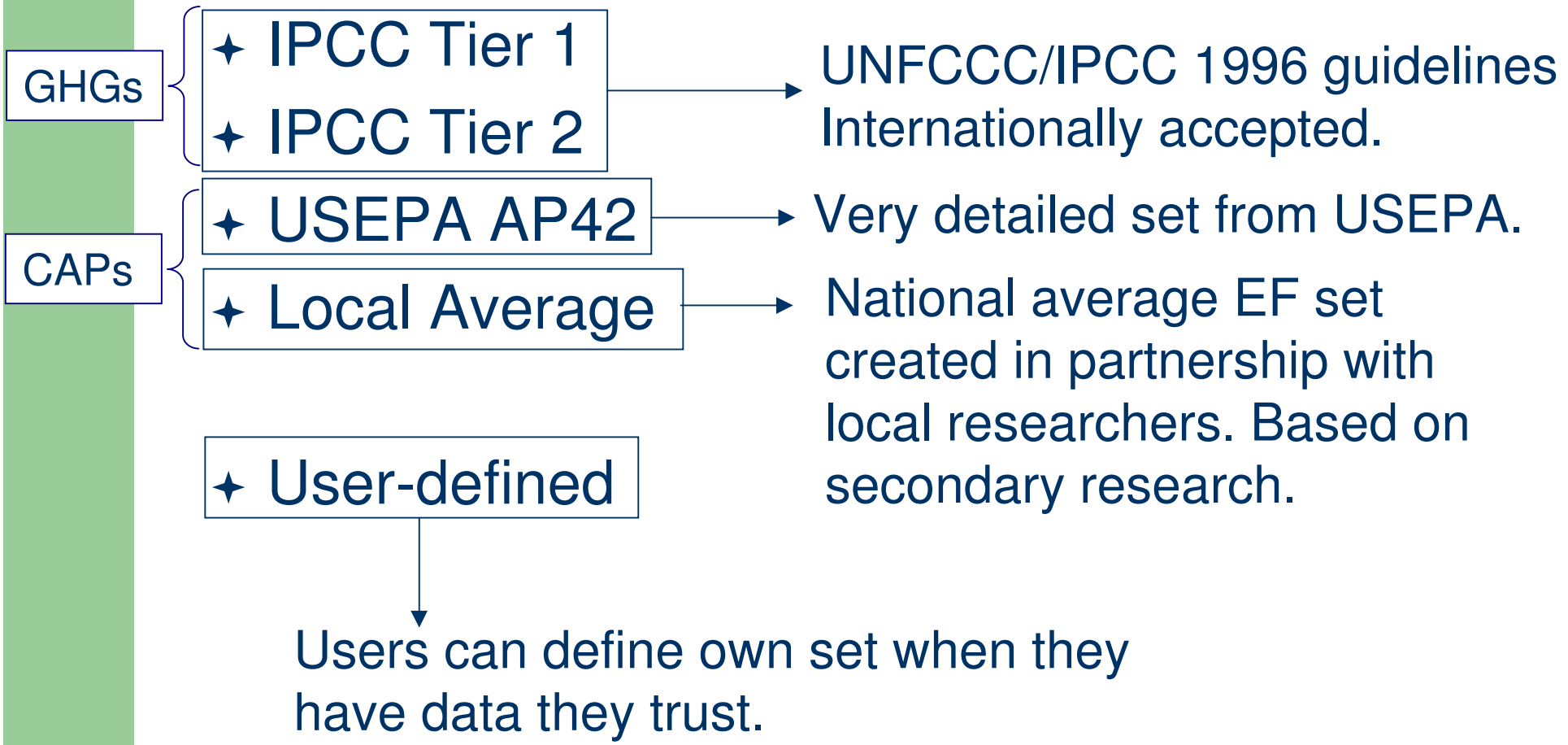
Data Sets: Emission Factor Trees



Emissions factor set forms a “tree”

- Select the most appropriate one for your calculation

Customizable Emission Factor Tree



Sample HEAT Results

Durham Community Measures	DCAP	CACP Reanalysis					
	eCO_2	eCO_2	NOx	SOx	VOC	CO	PM_{10}
Transportation Measures							
Regional Rail System	85,000	69,270	-135,000	-96,837	453,000	5,018,000	-8,521
Expand Mass Transit Bus System	68,000	54,000	74,334	6,655	310,558	4,034,000	1,904
Increased Use of Alternative Fuels in Motor Vehicles	39,000	33,991	191,293	8,349	295,003	2,378,000	540
Land Use Planning	320,000	327,469	1,211,000	86,564	1,809,000	19,284,000	28,024
Decrease motor vehicle traffic (walking and biking)	1,000	1,166	4,314	308	6,443	68,680	100
Decrease motor vehicle traffic (telecommuting)	6,000	12,245	45,299	3,237	67,647	721,000	1,048
Decrease motor vehicle traffic (car and vanpooling)	12,000	11,692	70,158	5,026	132,516	1,316,000	1,433
Decrease Idle time of Motor Vehicles	10,000	10,014	6,921	0	13,983	208,000	13,801
Residential, Commercial, Industrial Measures							
Residential Fuel Switching	36,000	19,000	80,097	127,079	-204	9,204	23,835
Residential Energy Efficiency	341,000	514,000	1,479,000	3,624,000	28,000	196,000	99,000
Residential Renewable Energy	9,000	17,000	50,054	155,271	588	5,372	3,465
Commercial/Industrial Fuel Switching	173,000	125,038	582,267	4,907,205	-1,354	61,030	158,045
Commerical/Industrial Energy Efficiency	495,000	524,000	1,647,000	4,099,000	108,800	630,000	134,000
Commercial/Industrial Renewable Energy	28,000	52,888	152,703	473,699	1,794	16,389	10,570
Reduce Heat Island Effect	18,000	35,349	102,000	316,000	1,199	10,954	7,065
Total	1,641,000	1,807,122	5,561,440	13,715,556	3,226,973	33,956,629	474,309

tons

lbs

What Can HEAT Be Used For?

- Advocacy and outreach
- Supporting voluntary programs
- Identify actions that reduce emissions targeted in an AQM plan before advanced modeling
- Policy implementation and planning
- Supporting anyone wishing to track emission impacts of energy, transportation, and waste activities

Who benefits from HEAT?

- Local and State Governments
- Energy, transportation, land use, and waste planners
- Research community
- Other NGO partners
- Anyone wishing to translate energy data into an emissions estimate

Current Multinational Application

HEAT is currently adapted for...

- Brazil
- South Africa
- India
- Indonesia

Planning is underway for…

- Canada
- United States
- Australia

Future for HEAT?

- Thousands of inventories and action plans
- 5-10 languages
- HEAT becomes premiere international repository for local energy and emissions data.
- Develop customized calculators for advanced analysis:
  - CDM methodologies
  - Carbon Asset Accounting
  - Land use/carbon stock
  - Sustainability indicators
  - Vulnerability/Adaptation tools

www.icleiheat.org
Choose "Public Log-in" to Demo

Thank You!

Please contact us to:

- Learn more about HEAT
- Explore ideas for partnerships
- Integrate advanced / specialty tools into this project
- Investigating developing HEAT for your country

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