Lehigh University Campus Metabolism

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Tracking Utilities and Waste Data | Mapping Student Impact | Empowering Efficiency and Sustainability

Dedicated to tracking Lehigh University's utility usage and waste creation data, the Lehigh Campus Metabolism Database is **a tool to promote student and staff empowerment.** The real-time database provides an educational platform with which students and staff may engage more deeply with the data around them and the choices generating that data through attractive public PI Vision displays.

Project Goals

- **Increase Lehigh University's efficiency and sustainability**
- **Create educational platform for students to utilize**
- **Provide accessibility to energy, water, and waste data so:**
  - **Staff can utilize the data to make facilities decisions**
  - **Students can learn and decrease their environmental impacts**
  - **Faculty and departments can partner with external organizations on projects dedicated to increasing sustainability on campus**

Database Background

The database collects :	Important Analyses:
• **Electricity usage data**	• **Totalizations for all usage data**
• **Natural gas usage data**	• **Energy Use Intensity (energy used per square foot building)**
• **Water usage data**	• **Water per capita (every dorm)**
• **Waste creation data**	• **Waste diversion rates**

7,017 Students

3 Campuses

196 Buildings

461 Utility Assets

29 Waste Streams

Data Flow into the PI System

Manually logged means the data has been manually uploaded to the PI Server through a push-button upload in Excel.
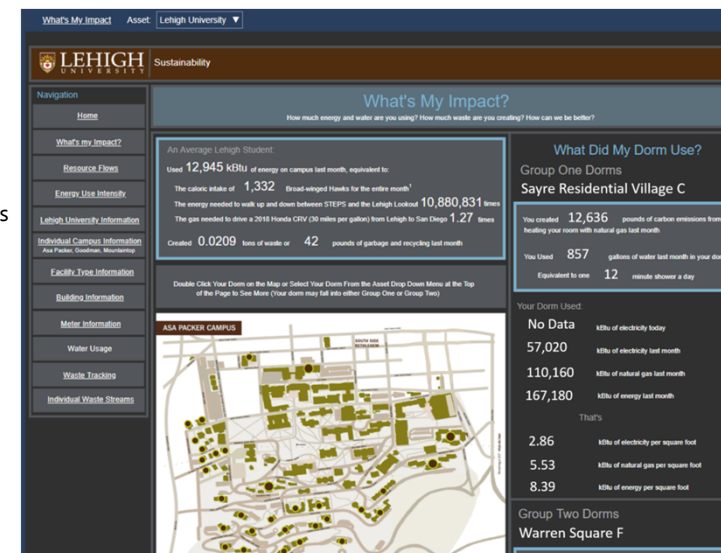
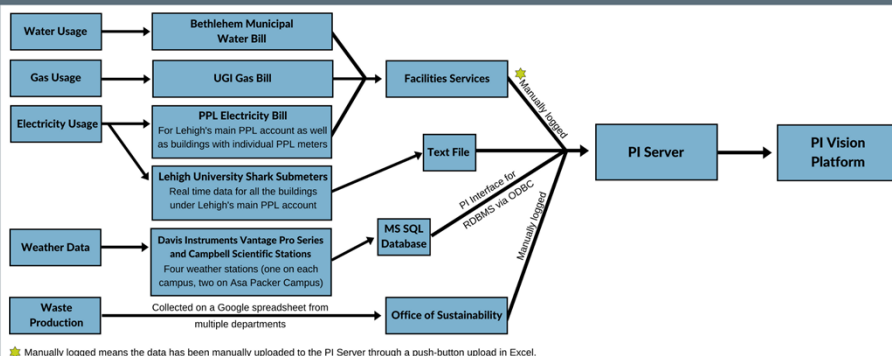## PI Asset Framework
Relational, human-friendly reference structure

- ❑ Elements
  - ❑ Lehigh University
    - ❑ Asa Packer Campus
      - ❑ Academic
      - ❑ Administrative
      - ❑ Athletic
      - ❑ Campus-Wide Utilities
      - ❑ Dining
      - ❑ Housing
      - ❑ Parking
      - ❑ Retail
      - ❑ Student Life
      - ❑ Vacant
    - ❑ Goodman Campus
      - ❑ Administrative
        - ❑ Advancement
          - ❑ Gas Meter 111
          - ❑ PPL Meter 31
          - ❑ Water Meter 99
        - ❑ Field Shop
        - ❑ Transport Services
      - ❑ Athletic
      - ❑ Housing
      - ❑ Parking
      - ❑ Tenant
      - ❑ Vacant
    - ❑ Mountaintop Campus
    - ❑ Other Data
      - ❑ Waste Streams
        - ❑ Compost
        - ❑ Recycling
        - ❑ Reuse-Donation
        - ❑ Waste
      - ❑ Weather Stations

PI Vision Display

Possible Future Work

- **Integrate Weather Station data into the System**
- **Have PI Vision displays be publicly accessible**
- **Convert ownership of the System to Facilities Services**
- **Make the PI Vision displays more visually engaging**
- **Provide data collection leveraging commercial off-the-shelf products to increase robustness, reliability, and security**
- **Collect data directly from billing sources via UFL/REST connector**

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