

Developing District System Design Support Package

Computer Tool Survey and Function Specification

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1 General Introduction

IDEA created a guide document to help planners and developers to create energy maps. Figure 1 shows the contents that could be included in energy maps: sustainable energy source (water body, biomass, wind, hydropower) location and district heating locations. The creation of energy maps happens after setting up the community district energy project objectives. It involves data collection of “building density, mix of uses, and anchor loads” [2] and data assembling and map creation.

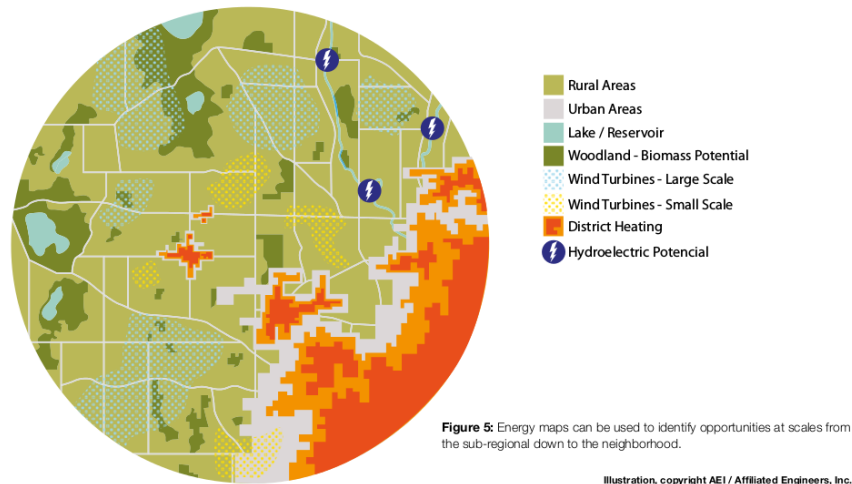


Figure 1: IDEA schematic energy map [2]

The work flow of the energy map creation and the information involved in the process are as follows (adapted from [2])

Step 1 Objective Setting

- People;
- Planet;
- Profit;

Step 2 Data collection

- Energy Demand (hourly scale [1])
 - Current energy consumption
 - Future energy consumption
 - * new development rate
 - * improvement of building energy efficiency,

- * improvement of people's energy use behavior
- Energy sources
 - Renewable: solar, wind, geothermal, biomass, water body
- Energy delivery system;
 - Existing district network

Step 3 Analysis

- “suitability of low carbon technology” [2]
 - Basic function
 - * Development scale
 - * Service area
 - * Energy supply profile
 - * “Implications for phasing” [2]
 - * Constraints: land use, zoning regulation etc.
 - People
 - Planet
 - * Annual total CO_2 emission
 - * “Ability to integrate local or renewable fuel sources.” [2]
 - Profit
 - * cost,
 - * profit,
 - * payback period.
- site analysis based on data from the previous step and land use constraint

From this analysis above, the current dynamic energy map has information of “Current energy consumption” but lacks the other information.

References

- [1] Nina Baird, Shalini Ramesh, Henry Johnstone, and Khee Poh Lam. *Building information modeling: BIM in current and future practice*, chapter 10. Wiley, Hoboken, New Jersey, 2014.
- [2] Michael King. Community energy: Planning, development and delivery. Technical report, IDEA, 2012.