IoW Drinking Water Rates Survey

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The Internet of Water Drinking Water Rates Survey is an ingestion tool for drinking water rates. With this tool, we can begin to create a centralized, public database to make rates data easier to find, access, and use in a standardized format.

CREATING A WATER RATES INGESTION TOOL

We began by building a rate survey using the web survey software KoBoToolbox. This survey is based in large part on the Survey created by the California Data Collaborative. Rate structures are complex. The survey is designed to walk the user through the process while controlling data entry to prevent entry errors.
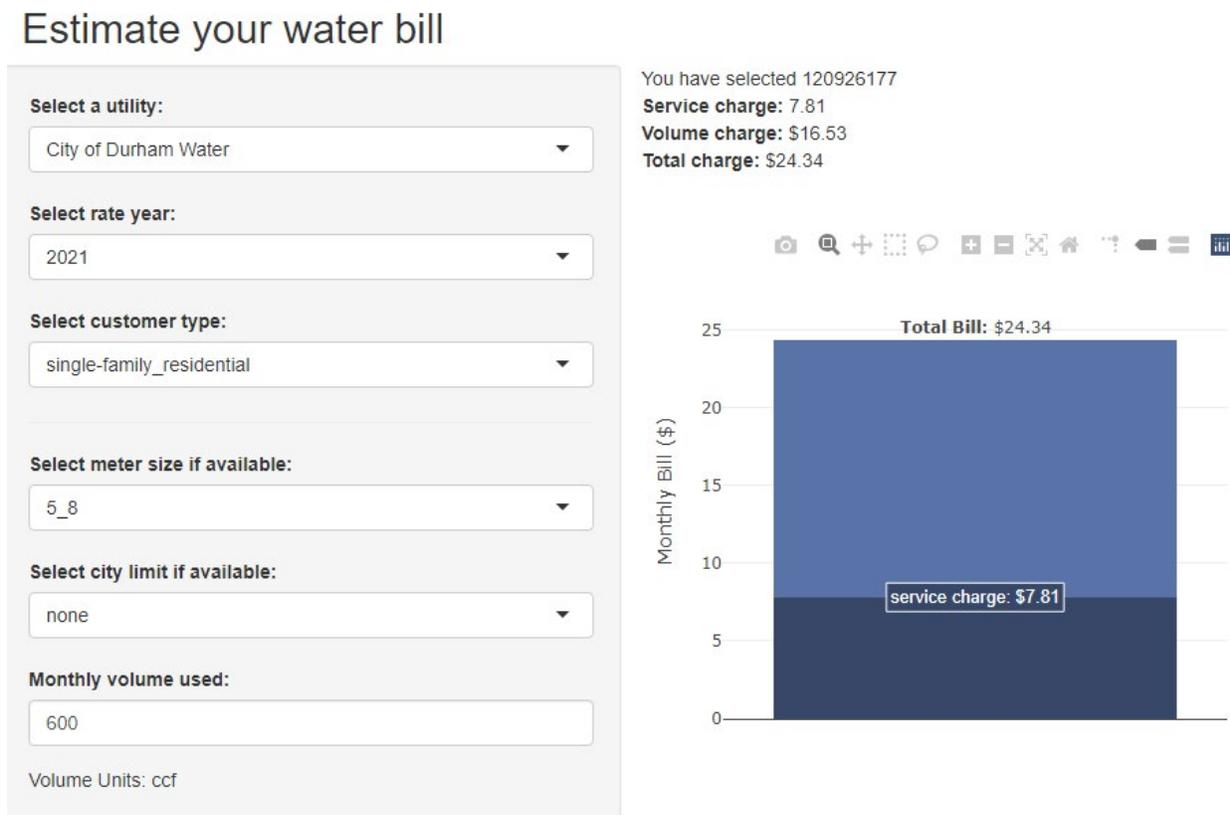
The survey allows users to distinguish between rate classes (e.g. single-family residential, multi-family-residential, irrigation, commercial, industrial, etc.), billing frequency, and billing unit. The survey captures any fixed charges (often associated with meter size, city limits, pressure zones, etc.), commodity charges based on the volume of water used, and drought surcharges. The survey also has the capacity to include water budgets; however, the formulas for calculating water budgets are varied and complex. Additional work is needed to be able to accurately calculate rates using water budgets.

ACCESS THE TOOL

Duke NICHOLAS INSTITUTE for ENERGY, ENVIRONMENT & SUSTAINABILITY

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ENTERING WATER RATES INTO THE TOOL & CALCULATING BILLS

We entered several sample utility rates into the survey and wrote a script in R to pull the data entered in the survey into a structured format to calculate monthly water bills. The r script is: api_to_dataframe.R. Additionally, we wrote a function that allowed users to select the utility, customer class, volume of water used, and additional attributes to calculate a monthly bill (rates_calculator/app.R). Figure 1 shows a simple bill estimator using sample data entered into the survey.

Figure 1: IoW Drinking Water Rates Survey Bill Estimator

This tool is a proof of concept that shows how a centralized, public database of drinking water rates could be created and how that database could be used to calculate estimated monthly bills. The IoW Drinking Water Rates Survey was created by the Nicholas Institute for Energy, Environment & Sustainability's Water Policy Program.