What does the ranking system do?

The ranking system evaluates all 40 towns in Bennington and Windham counties to determine their suitability for housing expansion, from the most to the least suitable. The model considers various factors relevant to housing expansion and assigns scores to each town, culminating in a final composite score that reflects their overall suitability.

Initial Procedure

1. **Data Collection**:
    - Town plans were gathered from the websites of the Bennington Regional Commission (BCRC) and Windham Regional Commission (WRC).
    - Designation Dataset collected from **State of Vermont's Agency of Commerce and Community Development (ACCD)** website.
2. **Analysis**:
    - Each town plan was carefully reviewed to extract and summarize key information, including:
        - **Housing Goals**: What housing objectives each town has set.
        - **Floodplains and Flood Management**: Locations of floodplains and the policies or controls in place to manage flooding.
        - **Land Use and Zoning Policies**: How land is allocated and regulated for development.
        - **Drinking Water and Wastewater Facilities**: The availability and quality of drinking water and wastewater management systems.
3. **Categorization of key information**

    It was observed that all town plans include information on similar factors and criteria, following a consistent structure. Each major topic—such as housing goals, floodplains, land use, and drinking water—was categorized into specific factors. Relevant information for these categories was systematically collected and summarized to ensure a comprehensive analysis.

Visualization of the Ranking System

A flowchart representing the ranking system can be found in this link.

https://lucid.app/lucidspark/941a4ed3-1328-4a55-b14f-8ff28abe0264/edit?viewport_loc=-1207%2C-34%2C4637%2C2204%2C0_0&invitationId=inv_5ba4aed1-ecae-4c66-940d-594de22ca7e2

Details of the Ranking System

The ranking system for the analysis relies on two primary data sources.

1. **Individual Town Plans**: These were sourced from the websites of the **Bennington Regional Commission** and the **Windham Regional Commission**. From these plans, we conducted a detailed examination of each town's provisions and policies concerning housing and infrastructure. Specifically, we analyzed the following aspects:
    - **Housing Goals**: Identifying the stated objectives and priorities for housing development in each town.
    - **Infrastructure Availability**: Assessing which towns have established water infrastructure and sewage or wastewater treatment systems, private/septic systems.
    - **Flood Control Policies**: Reviewing measures and strategies in place for flood mitigation, including some zoning laws and floodplain management.
    - **Land Use and Zoning**: Understanding land use and zoning regulations, which determine how land can be developed or preserved within each town.
2. **Designation Dataset**: This data was obtained from the website of the **State of Vermont's Agency of Commerce and Community Development (ACCD)**. From this source, we gathered information on the number and types of designations assigned to each town. Specifically, we recorded:
    - The number of **Village Centers**: These are designated areas aimed at supporting economic development and historic preservation.
    - The number of **Neighborhood Development Areas (NDAs)**: These designations are meant to encourage housing development near existing infrastructure.
    - Other related designations that highlight state-recognized priorities for urban and rural development.

By integrating the information from these two sources, we built a comprehensive framework to evaluate and rank the towns based on their housing goals, infrastructure readiness, flood control measures, and state designations. The next section will provide an in-depth discussion of each of these metrics, explaining their significance and the methods used for their evaluation.

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EXPANDING ON EACH METRICS:

Each town was evaluated based on the following metrics and approaches:

Housing Goals:

- **What kind of housing density is being encouraged in each town?**
  Town plans provide details on the type of housing density a town promotes. This includes fostering moderate to high density in areas like village centers, urban growth zones, or locations

near infrastructure (e.g., sewer systems or resorts), while preserving low density in rural or conservation areas to maintain their character.

Scoring (0–5):

- *0*: No relevant information in the town plan.
- *1–2*: Emphasis on preserving rural character or low-density housing.
- *3–5*: Support for high-density housing near designated centers or infrastructure, reflecting a stronger inclination toward housing expansion and development.

Higher scores reflect a stronger inclination toward housing expansion and development in these areas.

- **Does the town have a housing development priority?**
  Town plans were assessed for information about development priorities, including affordable housing (e.g., workforce, senior, mixed-use), balancing seasonal and year-round needs, promoting sustainable growth, preserving rural character and historic aesthetics, and limiting growth to align with conservation goals. Presence of such priorities state a town's interest in housing development and expansion.

  Scoring (0 or 1):

  - *1*: Specific housing development priorities (e.g., affordable housing) mentioned.
  - *0*: No such priorities mentioned.

- **Does the town encourage cluster or planned developments?**
  Cluster development strategically groups housing or other developments in specific areas while preserving significant portions of land as open space. Planned Unit Developments (PUDs) incorporate mixed uses like residential, commercial, and recreational elements into a comprehensive design, balancing growth, community needs, and environmental considerations.

  Scoring (0 or 1):

  - *1*: Town plan encourages cluster or planned development units to support housing expansion goals.
  - *0*: Limited or no mention of cluster/planned developments.

- **Does the town encourage Accessory Dwelling Units?**
  Accessory Dwelling Units (ADUs) are small, secondary housing units located on the same property as a primary residence. They are often used to increase housing availability while

maintaining neighborhood character. Town plans were reviewed for their stance on permitting or encouraging ADUs to support housing expansion or promote affordable housing.

Scoring (0 or 1):

- *1*: Town plan positively supports or permits ADUs.
- *0*: No mention of ADUs.

- **Does the town encourage mixed-use development?**
  Mixed-use development integrates various uses—residential, commercial, cultural, institutional, or industrial—within a single building, complex, or neighborhood. This approach fosters walkable, vibrant communities where housing is a central component.

  Scoring (0 or 1):

  - *1*: Town plan encourages/supports mixed-use development in designated areas.
  - *0*: No mention of mixed-use development.

- **Does the town encourage infill development?**
  Infill development focuses on building or redeveloping underutilized or vacant land within already developed areas, maximizing the use of existing infrastructure while addressing housing and community needs.

  Scoring (0 or 1):

  - *1*: Town plan encourages/supports infill development with details on target areas.
  - *0*: No mention or intention to support infill development.

Drinking Water Infrastructure:

- **Does the town have an established drinking water system?**
  This metric evaluates how municipalities source and manage drinking water, from robust municipal systems to reliance on private wells. Town plans were assessed for details about water infrastructure, including the presence of municipal systems, private sources, and zoning or environmental protections. Towns with mixed systems often combine public infrastructure with private sources to serve specific areas, emphasizing sustainability and resource management. A well-established drinking water system can significantly support housing expansion.

  Scoring (1–5):

  - **Score 5:** Towns with comprehensive municipal water infrastructure serving most residents, indicating strong capacity to support growth.

- **Score 4 and 3:** Towns or villages with partial municipal systems serving specific areas, supplemented by private wells or other water sources.
- **Score 2:** Towns primarily reliant on private wells but with regulations to ensure water quality.
- **Score 1:** Rural or unorganized towns with minimal infrastructure, fully dependent on private wells or natural water sources.

Higher scores reflect a greater capacity for supporting housing expansion and sustainable resource management.

- **Does the town have an established sewage and wastewater infrastructure?**
  This metric assesses the presence and management of sewage and wastewater systems, including centralized sewer facilities, septic systems, and conservation efforts. Town plans were reviewed for infrastructure details and their ability to support current and future needs. A well-established wastewater system is critical for housing expansion and environmental protection.

  Scoring (1–5):

  - **Score 5:** Centralized sewer systems or wastewater treatment facilities with sufficient capacity to support current populations and manage stormwater effectively.
  - **Score 4:** Expanding sewer systems or public systems in designated areas, with plans for future growth and development.
  - **Score 3:** Towns relying on septic systems but with strong zoning, regulations, or environmental management to protect water quality.
  - **Score 2:** Limited wastewater systems with basic protections, such as zoning or conservation-focused practices, but insufficient for significant housing expansion.
  - **Score 1:** Areas lacking centralized wastewater systems, heavily reliant on individual septic systems with minimal or no additional protections.

  Higher scores indicate more robust infrastructure, with the potential to better support housing and population growth while addressing environmental and regulatory needs.

Flood Control & Policy:

- **Does the town have favorable flood control?**
  This metric evaluates the town's strategies and measures to reduce or prevent damage caused by floods, as outlined in the town plans. Effective flood control involves a combination of preserving natural features like wetlands, implementing zoning regulations in flood-prone areas, managing stormwater, and upgrading infrastructure to enhance resilience. These measures not

only reduce risks to people, property, and ecosystems but also promote sustainable land use, making the area more suitable for housing expansion.

Scoring (1–5):

- **Score 5:** Town plans highlight comprehensive measures such as wetland preservation, riparian buffers, and vegetation zones that naturally mitigate flood risks, demonstrating strong flood control infrastructure.
- **Score 4:** Focused flood risk management strategies, including stormwater systems, floodplain conservation, and restrictions on development in high-risk areas.
- **Score 3:** Implementation of basic flood control measures, such as floodplain mapping, regulated development, and promoting flood resilience practices, but with gaps in comprehensive planning or infrastructure.
- **Score 2:** Partial flood risk mitigation, including erosion control, drainage improvements, or limited strategies without strong regulatory or protective mechanisms.
- **Score 1:** Little to no detailed flood control measures, with inadequate planning or infrastructure to effectively address flood risks.

Higher scores reflect robust flood control measures that support sustainable housing development and reduce the potential impact of floods on residents and infrastructure.

- **Does the town have favorable flood and floodplain policy?**
  This metric evaluates the town's strategies and regulations to mitigate flood risks and protect communities from flood-related damage, as outlined in the town plans. Strong flood policies integrate resilience into town planning and conservation efforts, focusing on proactive measures to reduce flood impacts and promote sustainable development.

  Scoring (1–5):

  - **Score 5:** Comprehensive policies that integrate flood resilience into town planning and environmental conservation. These include maintaining natural floodplains, updating hazard maps, and promoting sustainable land use to proactively mitigate flood risks.
  - **Score 4:** Focused strategies emphasizing zoning regulations, resilience planning, and education for officials. Policies may include specific measures like riparian buffers, culvert upgrades, and detailed flood management initiatives.
  - **Score 3:** Policies aimed at maintaining floodplains, encouraging community education, and reinforcing infrastructure. However, these efforts may lack comprehensive planning or widespread implementation.
  - **Score 2:** Basic policies that restrict development in flood-prone areas and encourage limited conservation efforts but lack robust enforcement, infrastructure upgrades, or strategic planning.
  - **Score 1:** Minimal or vague flood policies, with limited detail on strategies, implementation, or enforcement mechanisms.

Higher scores reflect more robust and proactive flood policies, which enhance a town's ability to mitigate flood risks, protect infrastructure, and support sustainable housing and community development.

Land Use and Zoning:

- **Does the town have favorable land use and zoning policies that support housing expansion?** This metric evaluates how a town's land use and zoning policies balance growth and conservation while designating areas for residential, commercial, agricultural, or conservation purposes. Effective zoning promotes sustainable growth, protects natural and cultural resources, and directs development to areas best suited for housing expansion.

  Scoring (1–5):

  - **Score 4:** Policies that promote compact, mixed-use development in village centers while conserving surrounding rural and natural landscapes. These policies encourage balanced growth and support housing expansion without excessive restrictions.
  - **Score 3:** Focus on preserving historic character, balancing growth with conservation efforts, and supporting mixed-use or low-density development. These policies allow for some housing expansion but with significant considerations for preservation.
  - **Score 2:** Emphasis on rural preservation or low-density development, with limited focus on infrastructure or balancing growth, indicating minimal support for housing expansion.
  - **Score 1:** Restrictive zoning policies heavily focused on rural preservation, with little to no accommodations for infrastructure or housing needs.

Note: No towns scored a 5 because even the most growth-oriented towns have restrictions or recommendations to prevent uncontrolled expansion, reflecting the need to balance development with preservation.

Higher scores reflect more growth-oriented policies that effectively balance development needs with conservation, making housing expansion more feasible.

Village Centers and other designations:

Data from the State of Vermont's Agency of Commerce and Community Development (ACCD) website was used to assess each town/municipality based on the following questions:

- Does the town have Village Centers?
- Does the town have Neighborhood Development Areas (NDAs)?
- Does the town have any other designations from the government?

Vermont's Designation Programs:
These programs, including Village Centers, Neighborhood Development Areas (NDAs), Downtowns, Growth Centers, and New Town Centers, aim to promote smart growth by fostering housing and

economic development in areas with existing infrastructure. They streamline permitting, offer tax incentives, and encourage mixed-use, compact, and walkable communities. By focusing development within designated areas, these programs reduce costs for developers, promote affordable housing, and balance housing expansion with the preservation of Vermont's rural and historic character, ensuring sustainable growth.

Scoring (0/1)
Each metric was scored as follows:

- **1:** The town has the designation in place.
- **0:** No such designation exists.

These scores reflect the town's alignment with state-supported initiatives for housing and economic development, offering insights into its potential for sustainable growth and infrastructure support.

Normalization and Weighted Scoring Process

Normalization: Min/Max Normalization

After Scoring Each Metric
To ensure consistency and comparability across metrics, the raw scores for each category were normalized to a scale from 0 to 1. Normalization adjusts raw scores to a common scale, enabling aggregation or comparison without bias due to differing original scales.

For normalization, **Min/Max Normalization** was applied. The formula used is:

$$\text{Normalized Score} = \frac{\text{Raw Score} - \text{Minimum Score}}{\text{Maximum Score} - \text{Minimum Score}}$$

For example: If Dorset has a **Total Housing Goals Score** of 10, with a minimum score of 2 and a maximum score of 15 for the category, the normalized score is calculated as:

$$\text{Normalized Score for Dorset} = \frac{10 - 2}{15 - 2} = \frac{8}{13} \approx 0.6$$

Category-Specific Metrics

Below is a detailed explanation of how the normalized scores were calculated for each category:

1. **Housing Goals**
    - Metrics Included: Development priority, density encouragement, cluster or planned development, ADUs, mixed-use development, and infill development.
    - **Calculation:**
        - Scores for all these metrics were summed to get the **Total Housing Goals Score**.
        - This total score was then normalized using Min/Max Normalization to obtain the **Normalized Housing Goals Score**.
2. **Water Infrastructure**
    - Metrics Included: Drinking water system and sewage & wastewater system.
    - **Calculation:**
        - Scores for these metrics were summed to get the **Total Water Infrastructure Score**.
        - This total score was then normalized to obtain the **Normalized Water Infrastructure Score**.
3. **Flood Control & Policy**
    - Metrics Included: Flood control and flood policy.
    - **Calculation:**
        - Scores for these metrics were summed to get the **Total Flood Control & Policy Score**.
        - This total score was normalized to obtain the **Normalized Flood Control & Policy Score**.
4. **Land Use and Zoning**
    - **Calculation:**
        - The raw score for Land Use and Zoning was directly normalized to get the **Normalized Land Use and Zoning Score**.
5. **Village Centers, Neighborhood Development Areas (NDAs), and Other Designations**
    - These metrics were scored as binary values (0 or 1).
    - **Calculation:**
        - Since binary scoring is already within the range of 0 to 1, no normalization was applied. The raw binary scores were carried forward.

After Normalizing Scores..

Weighted Scoring

The normalized scores for each category were then multiplied by their corresponding **weights** to calculate weighted scores for each category.

1. **What are Chosen Weights?**
    - **Weights** represent the relative importance of each category or indicator.
    - They are expressed as percentages, summing to 100%.

Indicators	Weights
Village Center Score	25%
NDA Score	10%
Other Designations Score	5%
Housing Goals Score	15%
Water Infrastructure Score	20%
Floodplain Control and Policy Score	10%
Land Use and Zoning Score	15%
Does the weights add upto 100?	Yes

    - For example:
        - Village Center Score (25%): This indicator contributes 25% to the overall score, meaning it has significant influence compared to others, like "Other Designations Score (5%)".
    - **Flexibility:**
        - Weights can be adjusted based on the user's goals or priorities. For example, if the focus is on water infrastructure, the weight for that category can be increased (e.g., 30%), and the other weights adjusted proportionally to maintain a total of 100%.
2. **What are Weighted Scores and How are They Calculated?**
    - **Definition:** Weighted scores reflect the contribution of individual indicators to the overall score of each town, adjusted by their assigned importance (weights).
    - **Calculation Formula:**

      Weighted Score = Weight of Indicator × Normalized Score of Indicator

    - Example:
        - If the **Weight of Housing Goals** is 20% and the **Normalized Housing Goals Score** is 0.6, the **Weighted Score of Housing Goals** is:

          Weighted Score of Housing Goals = 0.2 × 0.6 = 0.12

FINAL SCORE CALCULATION AND TOWN RANKING

After Normalization and Weighted Score Calculations

Once the normalized scores for each category were multiplied by their assigned weights to obtain the weighted scores, the next step was to calculate the **Final Town Score**. This score serves as a comprehensive metric that combines the performance of a town across all assessed areas.

Final Town Score Formula

FINAL TOWN SCORE: Weighted Score of Housing Goals + Weighted Score of Water Infrastructure + Weighted Score of Flood Control & Policy + Weighted Score for Land Use & Zoning + Weighted Score for Village Centers + Weighted Score for NDA + Weighted Score for Other Designations

Each of the categories contributes to the final score based on its weight, reflecting its relative importance in evaluating the town's suitability for housing expansion.

Town Ranking

- **Purpose:**
  The **Final Town Score** is used to rank towns, with higher scores indicating better overall performance across the assessed metrics.
- **Ranking Logic:**
  Towns with higher scores rank higher, as their scores demonstrate stronger performance in critical areas such as:
  - Housing goals
  - Water infrastructure
  - Flood control and policy
  - Land use and zoning
  - Village Centers, NDAs, and other government designations
- **Significance of High Scores:**
  A higher final score suggests that a town has:
  - More robust infrastructure.
  - Favorable policies for housing development.
  - A balanced approach to growth and conservation.

This ranking helps identify the towns most suitable for housing expansion, guiding stakeholders in decision-making processes regarding resource allocation, development projects, and strategic planning.