Joining Perimeter & Evacuation Zones Watch Duty Datasets

Three matching options when perimeter ID doesn't have an evac zone ID provider:

1. Simply calculating distance between **centroids**

2. Calculating **endpoints nearest match** (Treat each polygon's corner as a point, then find the nearest perimeter vertex to each zone vertex.)

3. **Boundary to boundary** (exact shortest edge-to-edge distance using nearest points on outlines).

Step-by-step (boundary-based)

- **Filter:** keep only **approved** perimeters.
- **Prefilter candidates:** for each zone, consider only perimeters whose **centroids** are within **5 miles**.
- **Exact distance:** compute **nearest points** between **zone boundary** and **perimeter boundary**. Keep:
    - **zone_closest_point (lon, lat)**
    - **perimeter_closest_point (lon, lat)**
    - **shortest_distance (meters)**
- **Pick match:** choose the **smallest distance** per zone

Example

- Zone (zone_id = 123): MULTIPOLYGON(((… -118.083071 34.237698, -118.082500 34.237698, -118.082500 34.238200, …)))
- Perimeter (perimeter_id = 987): MULTIPOLYGON(((… -118.082000 34.237600, -118.081500 34.237600, -118.081500 34.238100, …)))

Output:

- **Zone closest point:** (−118.082500, 34.237698)
- **Perimeter closest point:** (−118.082000, 34.237698)
- **Shortest distance: ≈ 46 meters**