

## **Building resilient villages in western Oregon with AI Tools**

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### **Using AI tools in design and operations**

AI planning tools can help optimize the site plan by testing different arrangements of tiny homes, gardens, animal areas, and solar arrays on candidate parcels to minimize erosion risk, flood exposure, and wildfire spread. They can also support crop planning, water-use modeling, and energy load forecasting tailored to western Oregon's seasonal patterns, improving the chances that 5–10 acres is used efficiently enough to support core needs of the 20–25-person village. At the community level, AI-assisted coordination platforms can help schedule shared labor for gardens, maintenance, and media production for the Village Television Show, strengthening the Resilient Communities Network as more villages come online.

### **Village scale and land needs**

For a small “village” of 20–25 people, many intentional communities and ecovillages treat 2–5 acres as a practical minimum for housing, gardens, circulation, and shared spaces, especially when using tiny homes and clustered design. Western Oregon permaculture education sites show that 10–20 acres supports not only housing and gardens but also forest buffers, firebreaks, and small-scale agroforestry, which become important for climate resilience. A reasonable target for a resilient pilot village is roughly 5–10 acres, expanding toward 15–20 acres if the goal is high food and energy self-reliance plus habitat restoration.

### **Breaking down the land use**

Within that 5–10 acre range, land can be divided into functional zones that match your description of gardens, water well, solar collectors, tiny homes, fire pit, kitchen, and domestic animals. A typical layout might allocate about 1–2 acres for clustered tiny homes and shared indoor spaces, 1–3 acres for intensive gardens and orchards, 1–3 acres for small livestock or silvopasture, and the rest as forest edge, riparian buffers, paths, and fire-safe open space. Zoning and best-practice guidelines for sustainable neighborhoods recommend also reserving at least 10% of total acreage as permanent open space with minimal paving to protect ecological functions and flood resilience.

## **Food, water, and energy assumptions**

In the Willamette Valley climate, intensive, climate-adapted gardening and small-scale agroforestry can provide a large share of vegetables, fruits, and some animal products for 20–25 people on 1–3 well-managed acres, especially with season extension, seed saving, and soil-building practices. A reliable water well with storage, rainwater harvesting on roofs, and drought-conscious planting helps keep that food system resilient under increasing summer drought and heat stress. Solar collectors sized for shared loads (kitchen, water pumping, lighting, communications) can fit on building roofs and small ground arrays within a fraction of an acre, with batteries prioritized for critical services during outages.

## **Summary land estimate**

Putting these pieces together, a concise working estimate for a resilient village of 20–25 people in western Oregon is:

- + Minimum viable pilot: about 5 acres if the village accepts partial dependence on outside food and energy, uses clustered tiny homes, and intensively manages gardens and water.
- + Strongly resilient model: about 10–15 acres to allow more food production, animal systems, fire-safe spacing, habitat, and long-term soil and water protection.
- + Further refinement should come from site-specific analysis of soils, water availability, slope, and local regulations, ideally combining permaculture design expertise with AI-based land-use modeling.