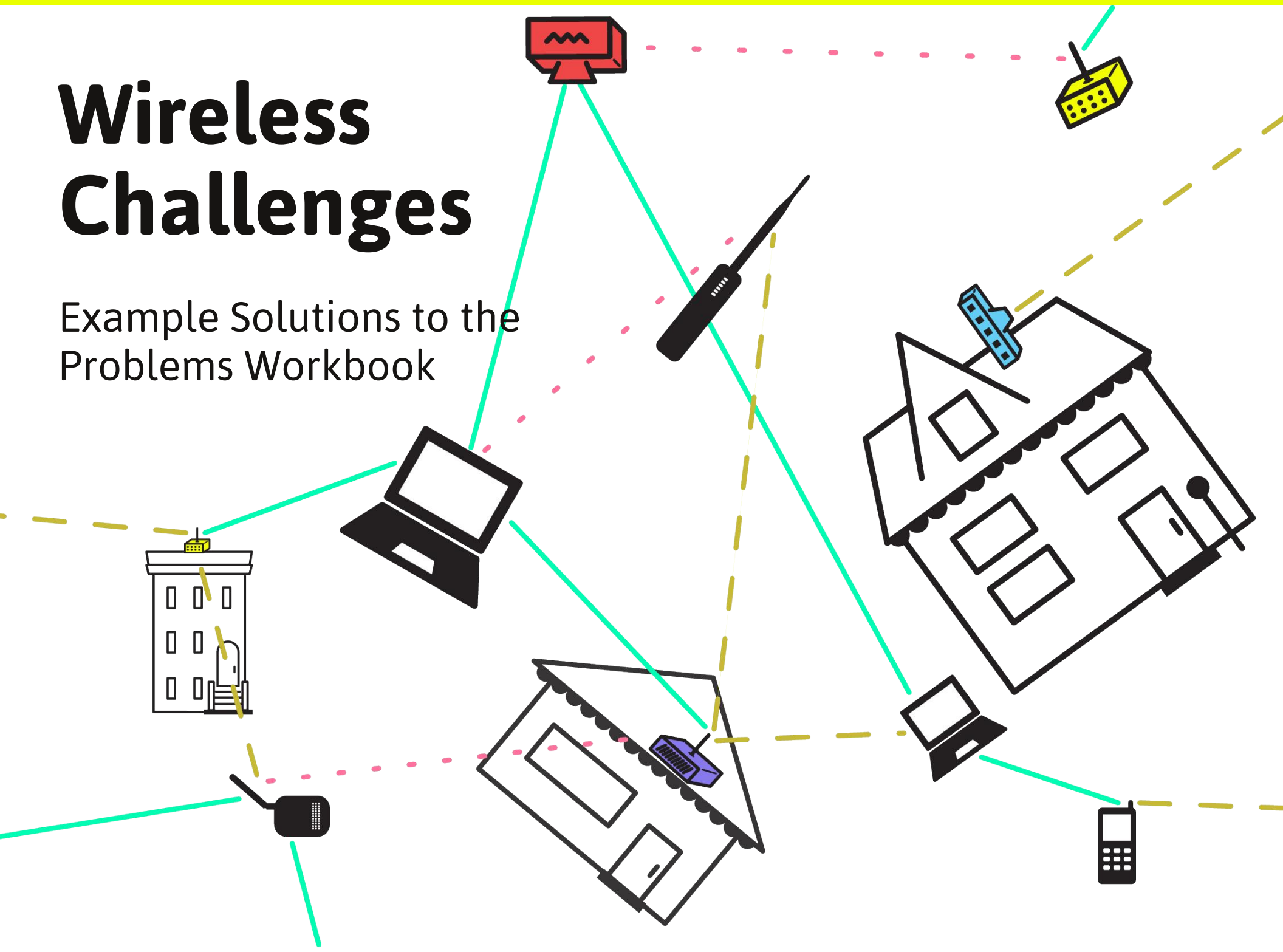
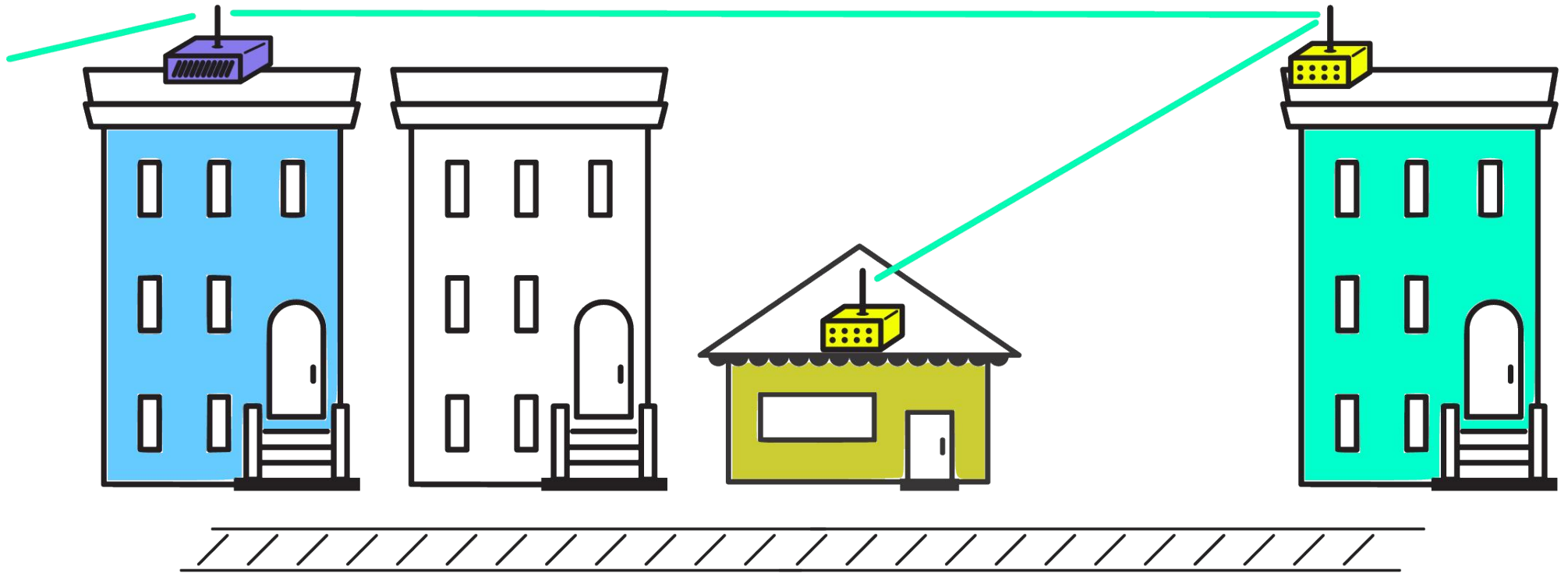


# Wireless Challenges

Example Solutions to the Problems Workbook

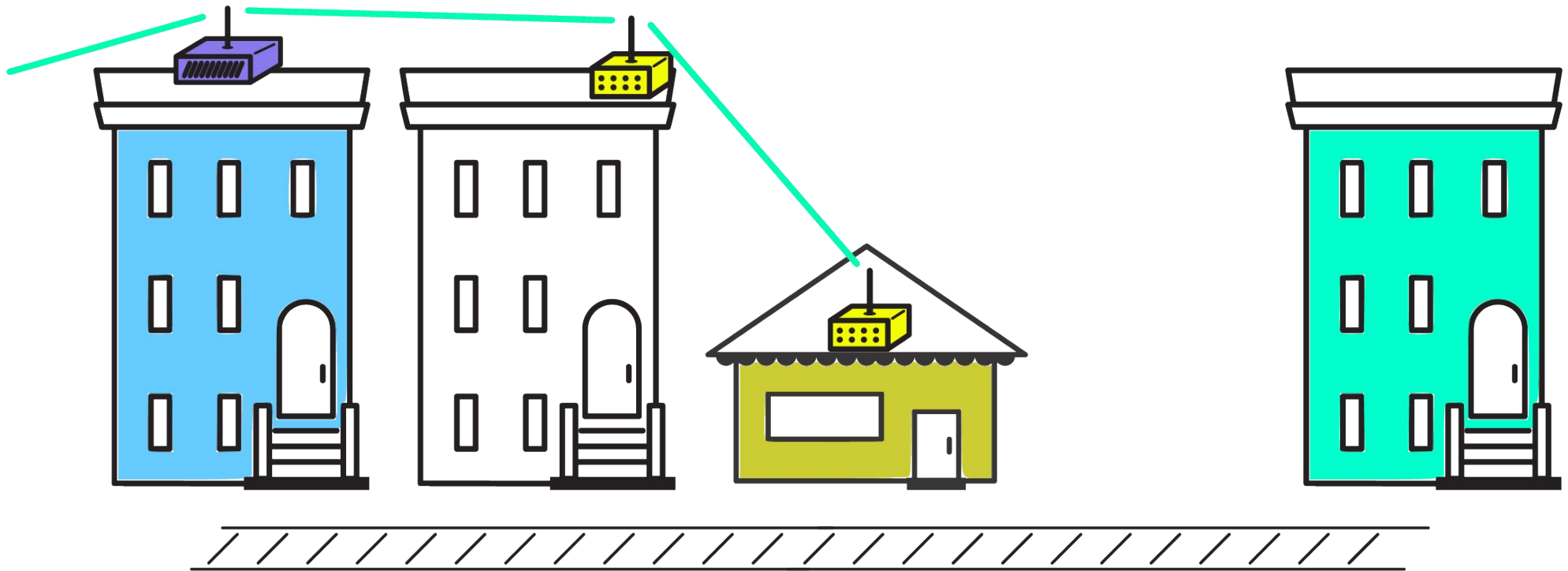


**Problem 1:** You don't have a good link to your neighbor's roof.



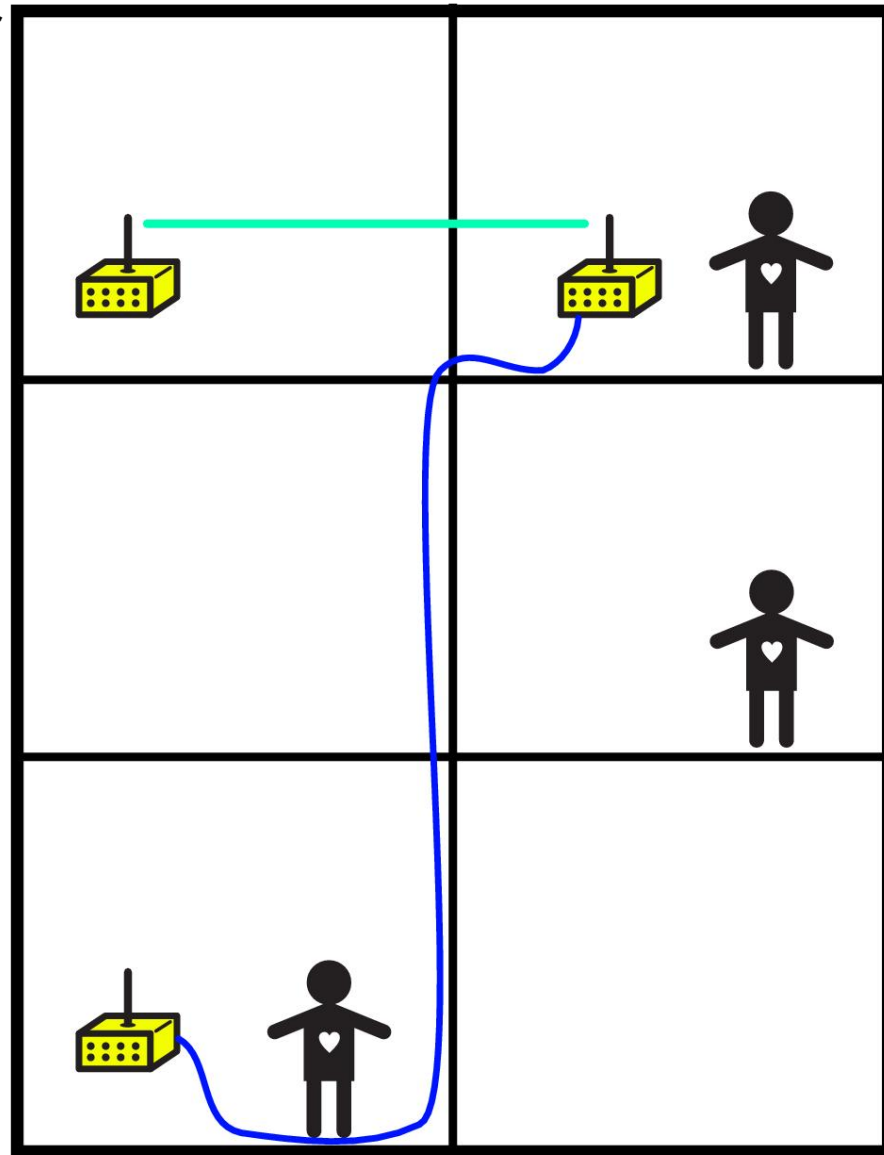
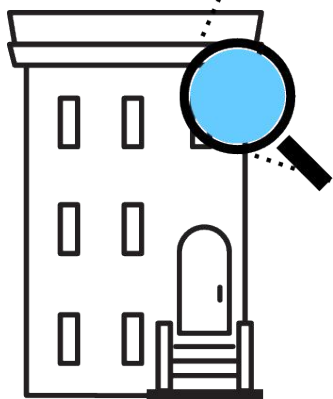
**Example Solution 1:** Add a neighbor node to reach the spots you can't see.

**Problem 1:** You don't have a good link to your neighbor's roof.



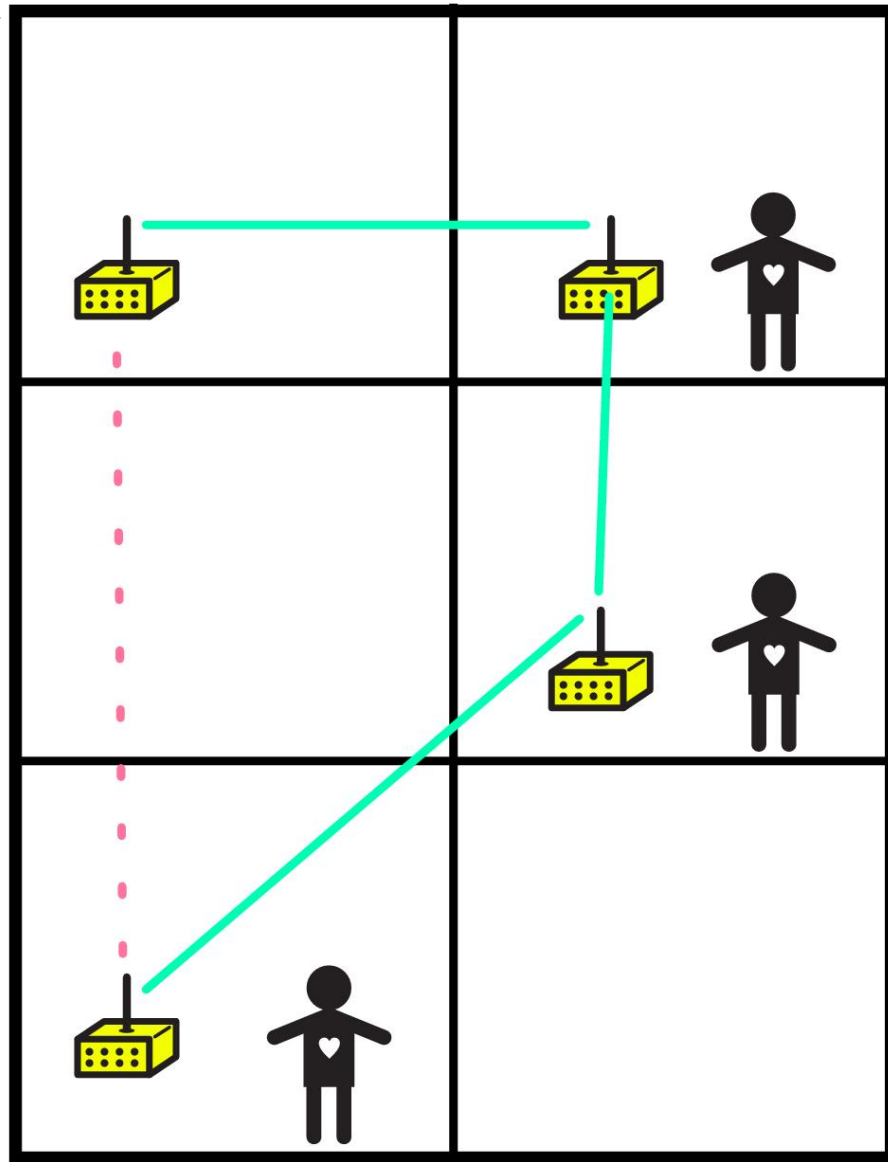
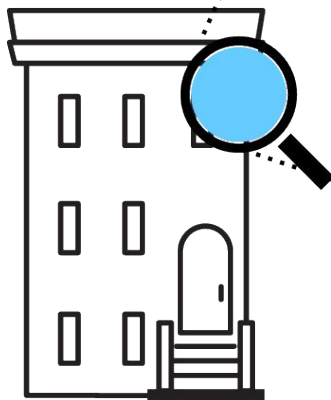
**Example Solution 2:** Add a neighbor node to reach the spots you can't see.

**Problem 2:** Thick walls prevent good links between apartment units.



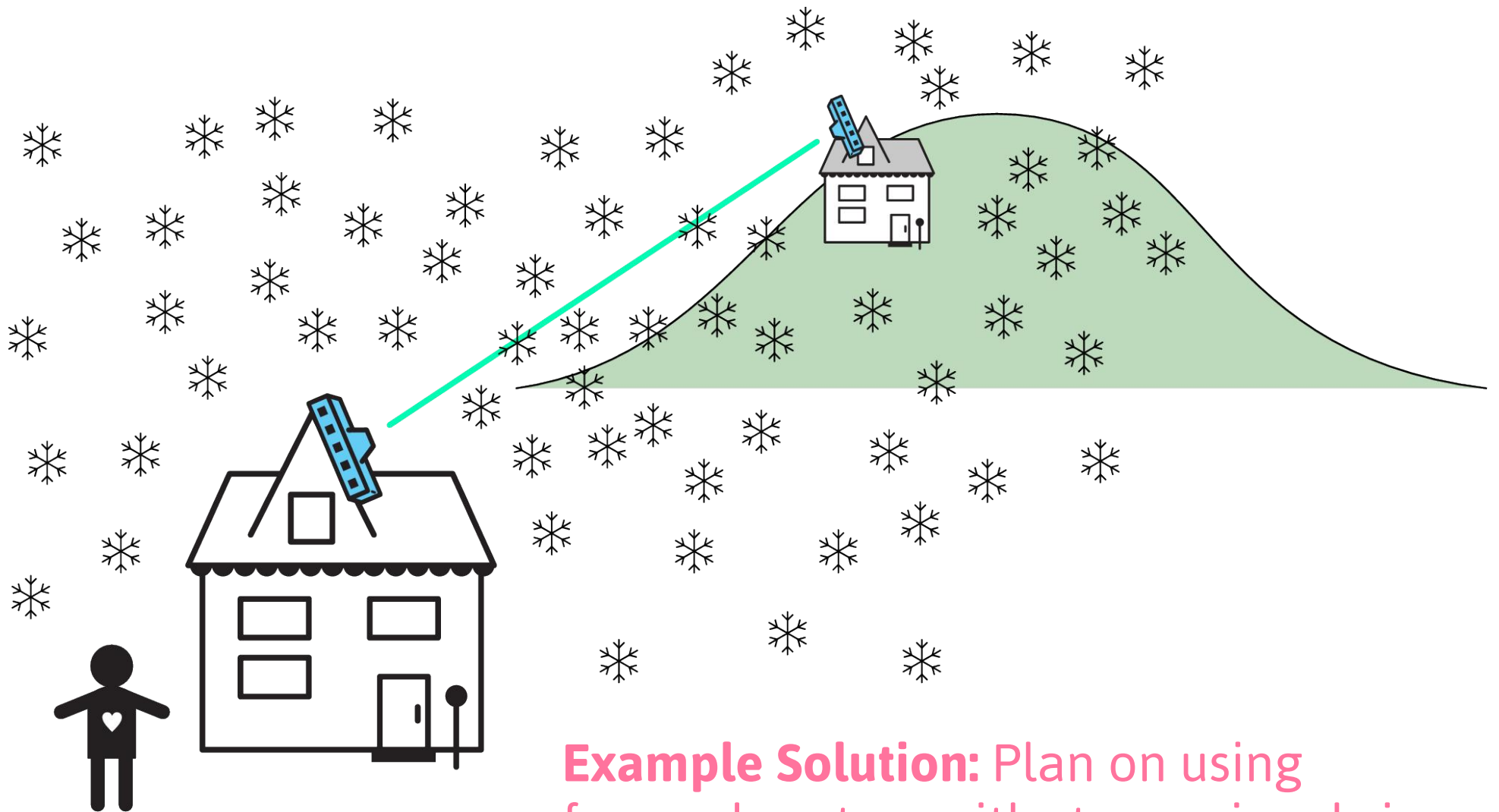
**Example Solution 1:** Put an Ethernet cable between the nodes to create a wired link.

**Problem 2:** Thick walls prevent good links between apartment units.



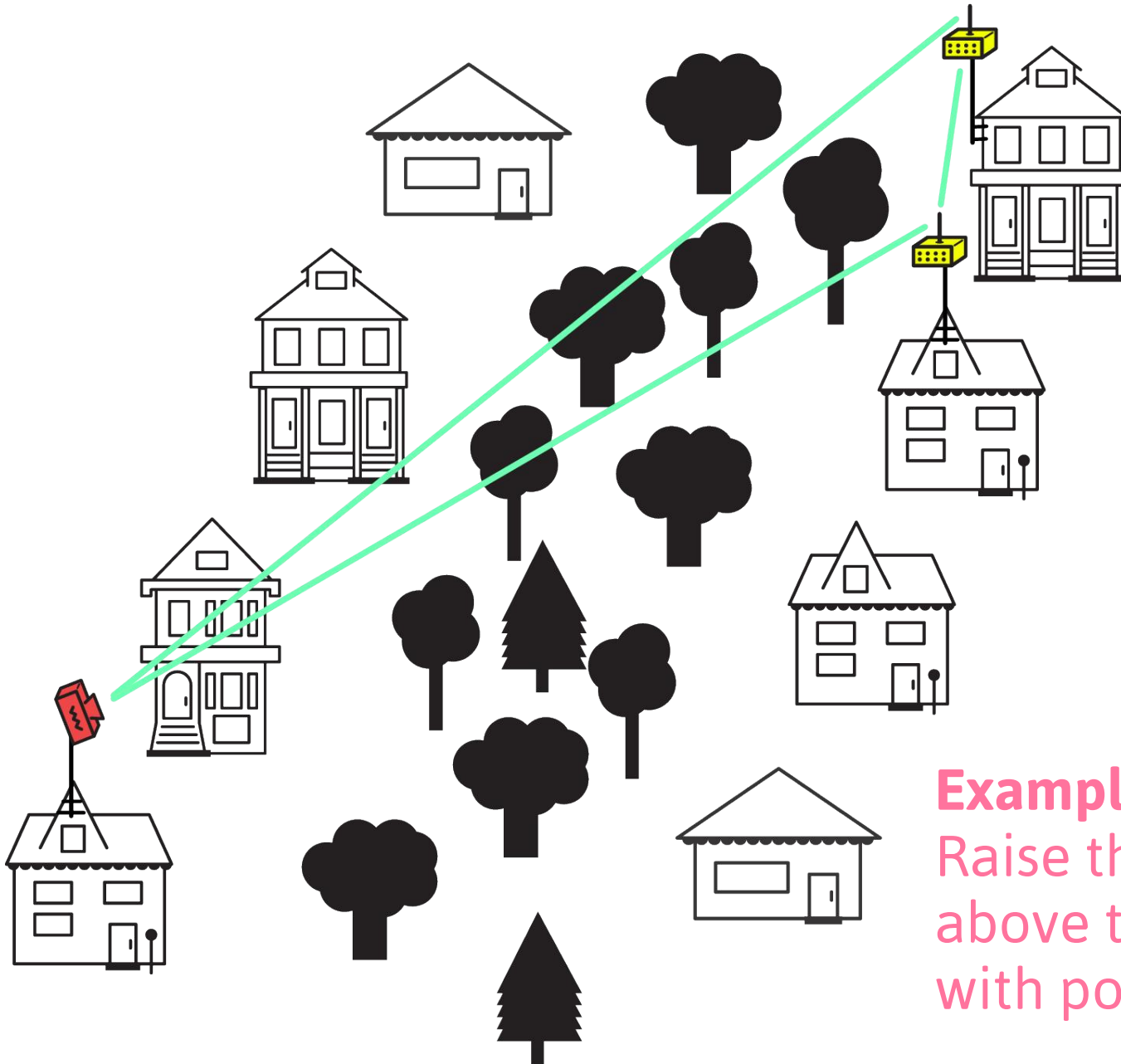
**Example Solution 2:** Ask a neighbor to host a repeater node. This will be slower than the cable.

**Problem 3:** Frequent rain and snow causes links to drop in quality or disconnect.



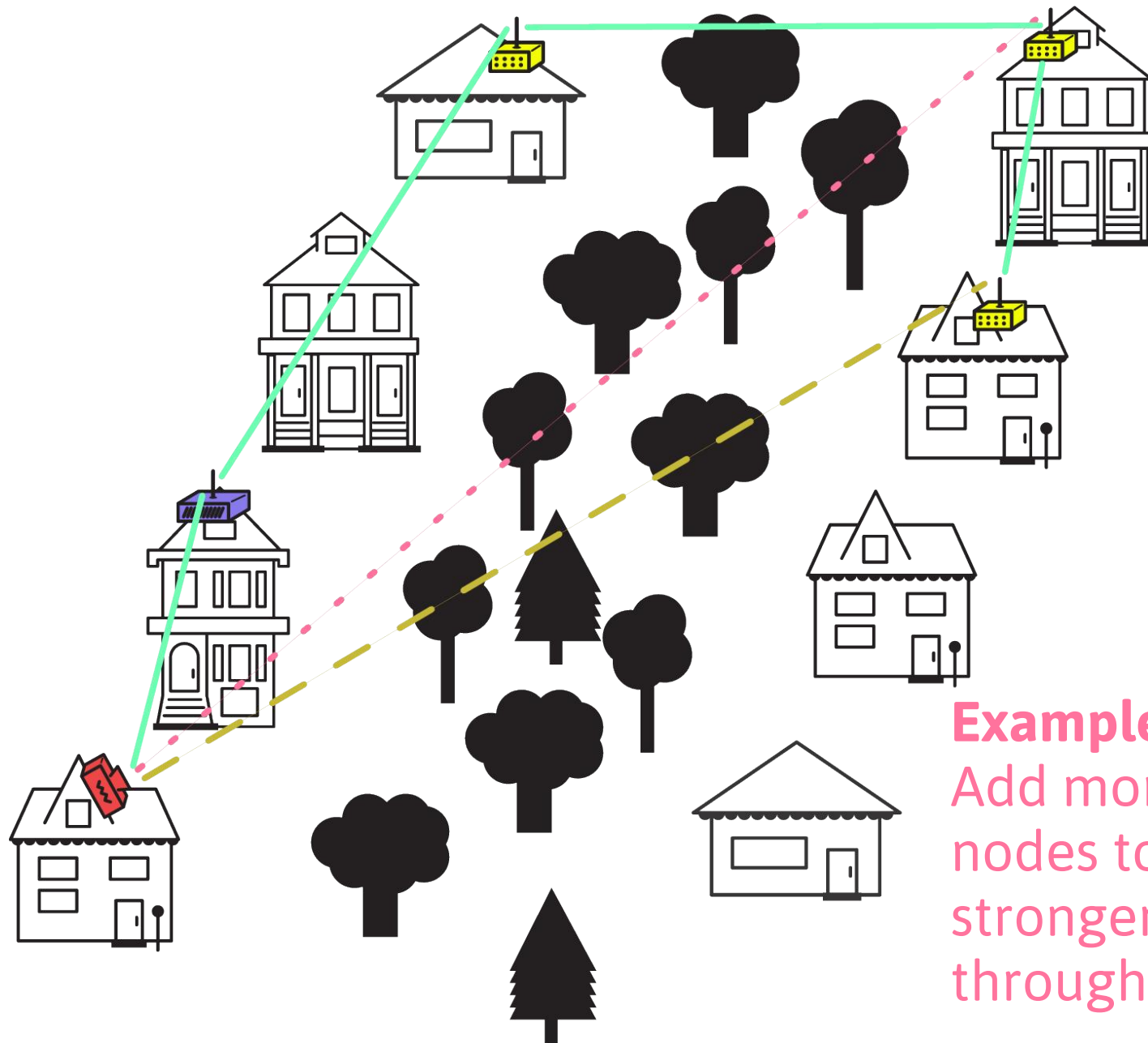
**Example Solution:** Plan on using focused routers with strong signals in areas where such weather is common.

**Problem 4:** Some neighbor links are blocked by the trees between houses.



**Example Solution 1:**  
Raise the routers  
above the tree line  
with poles.

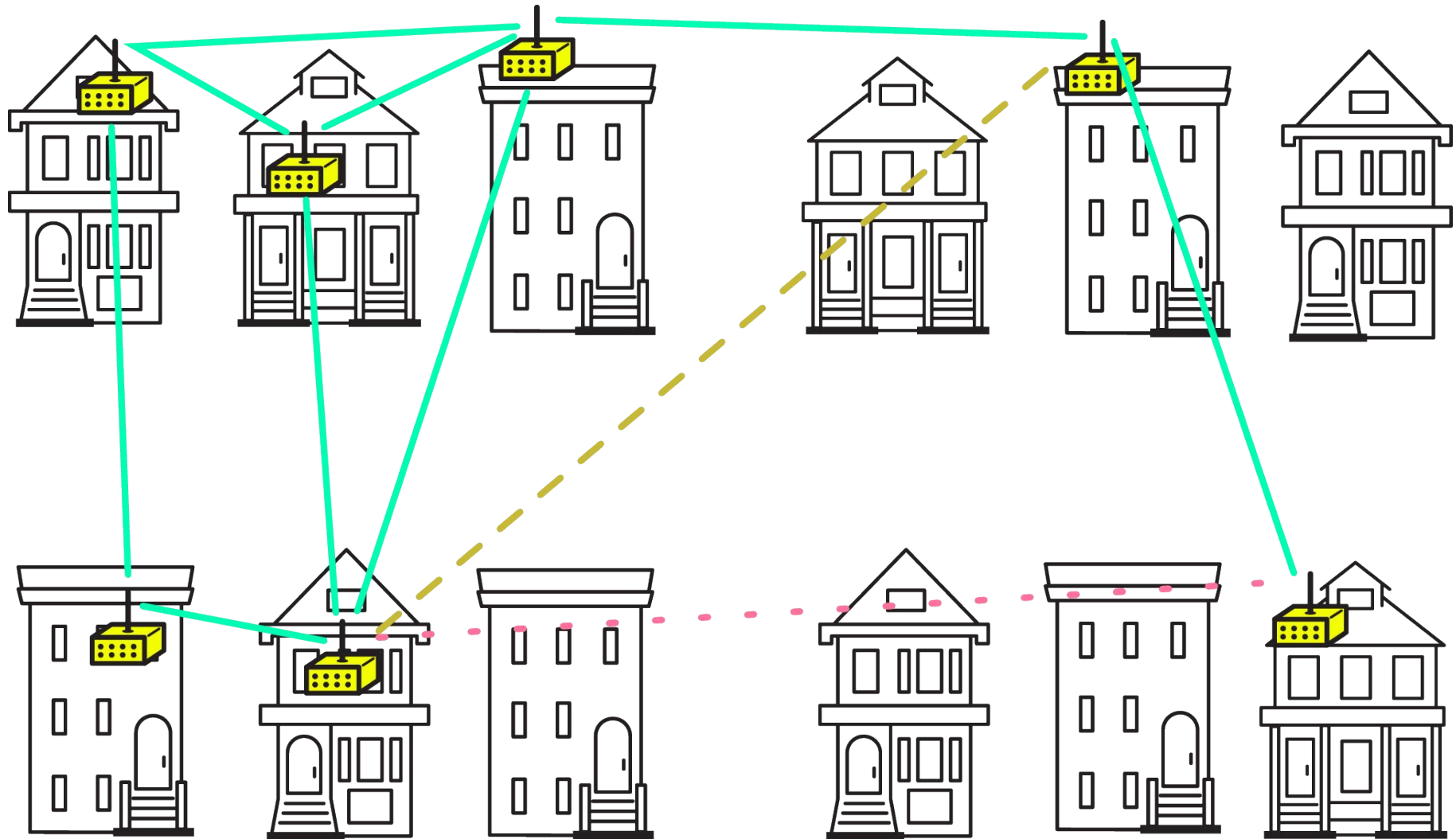
**Problem 4:** Some neighbor links are blocked by the trees between houses.



**Example Solution 2:**  
Add more neighbor nodes to make stronger links through the area.

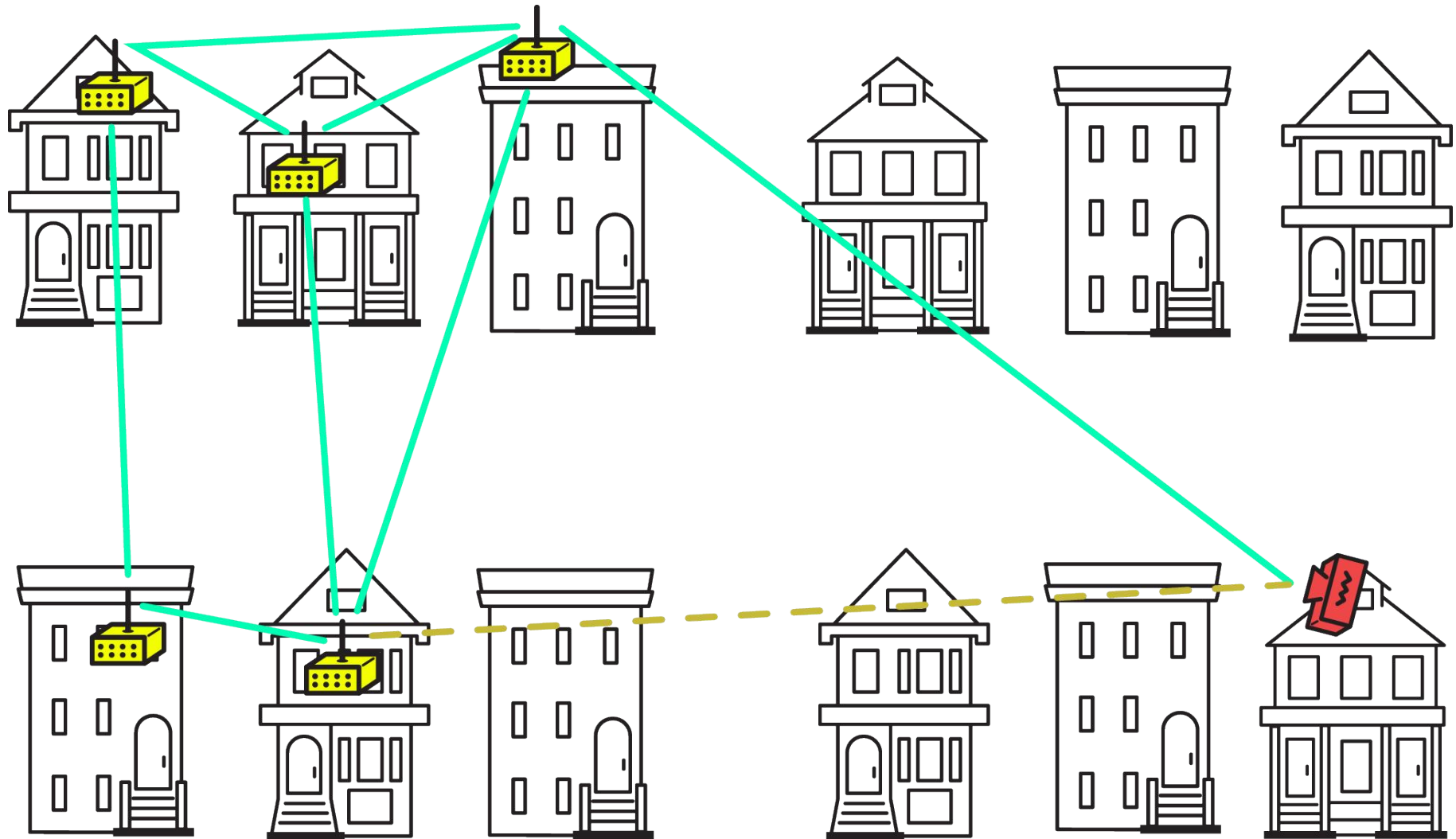


**Problem 5:** One building has weak links to the rest of the neighborhood.



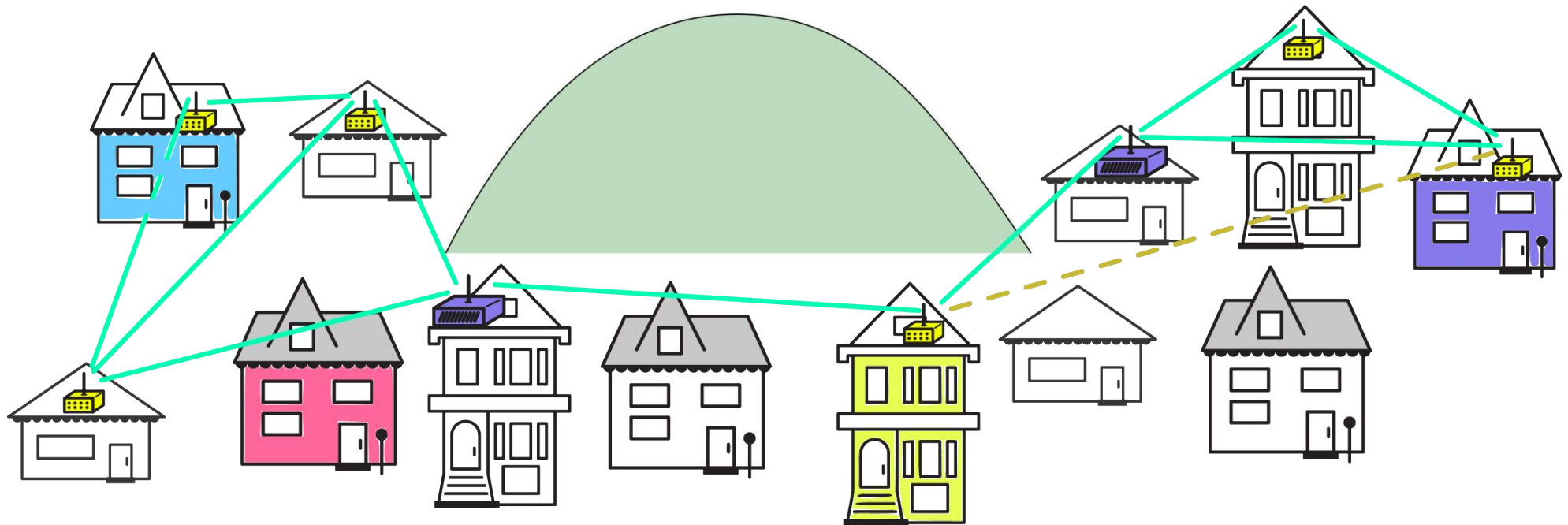
**Example Solution 1:** Add another neighbor router to repeat the signal.

**Problem 5:** One building has weak links to the rest of the neighborhood.



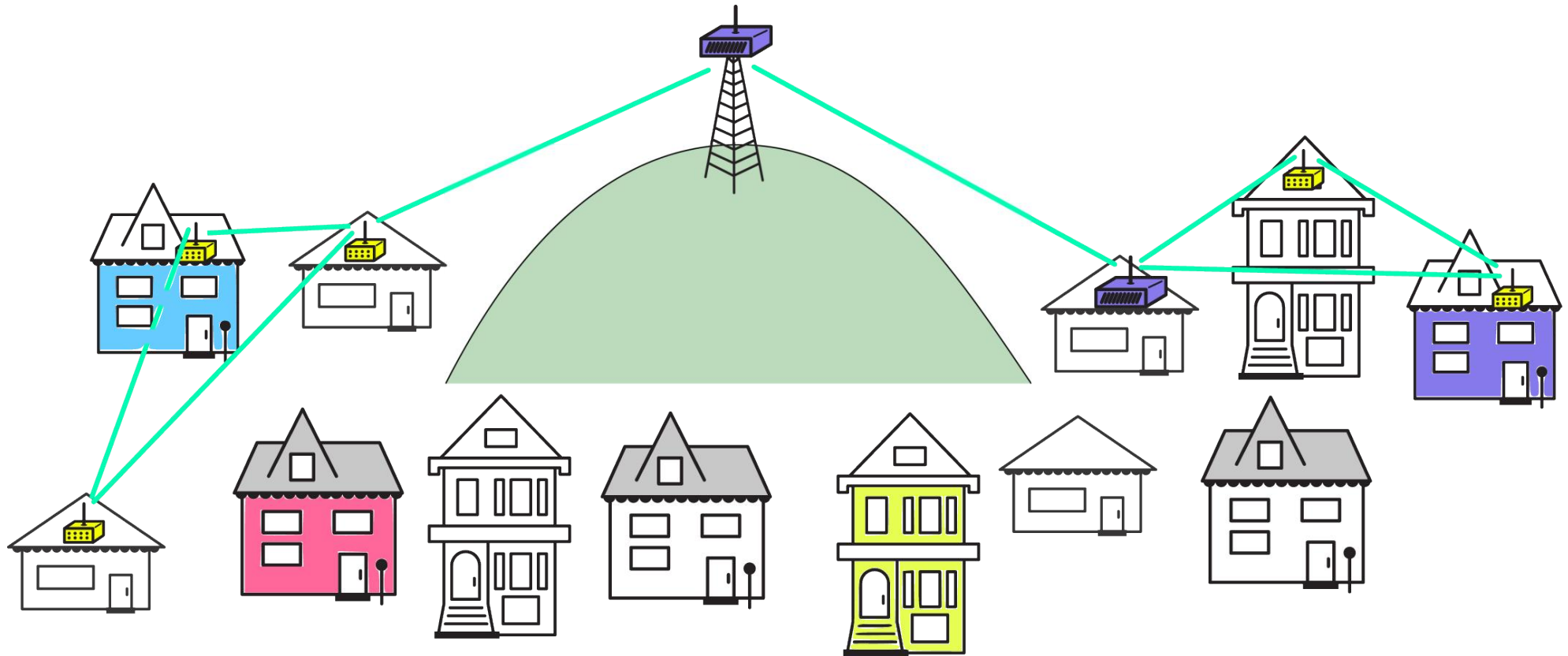
**Example Solution 2:** Use a directional router instead.

**Problem 6:** A hill blocks the links to your nearby neighbors.



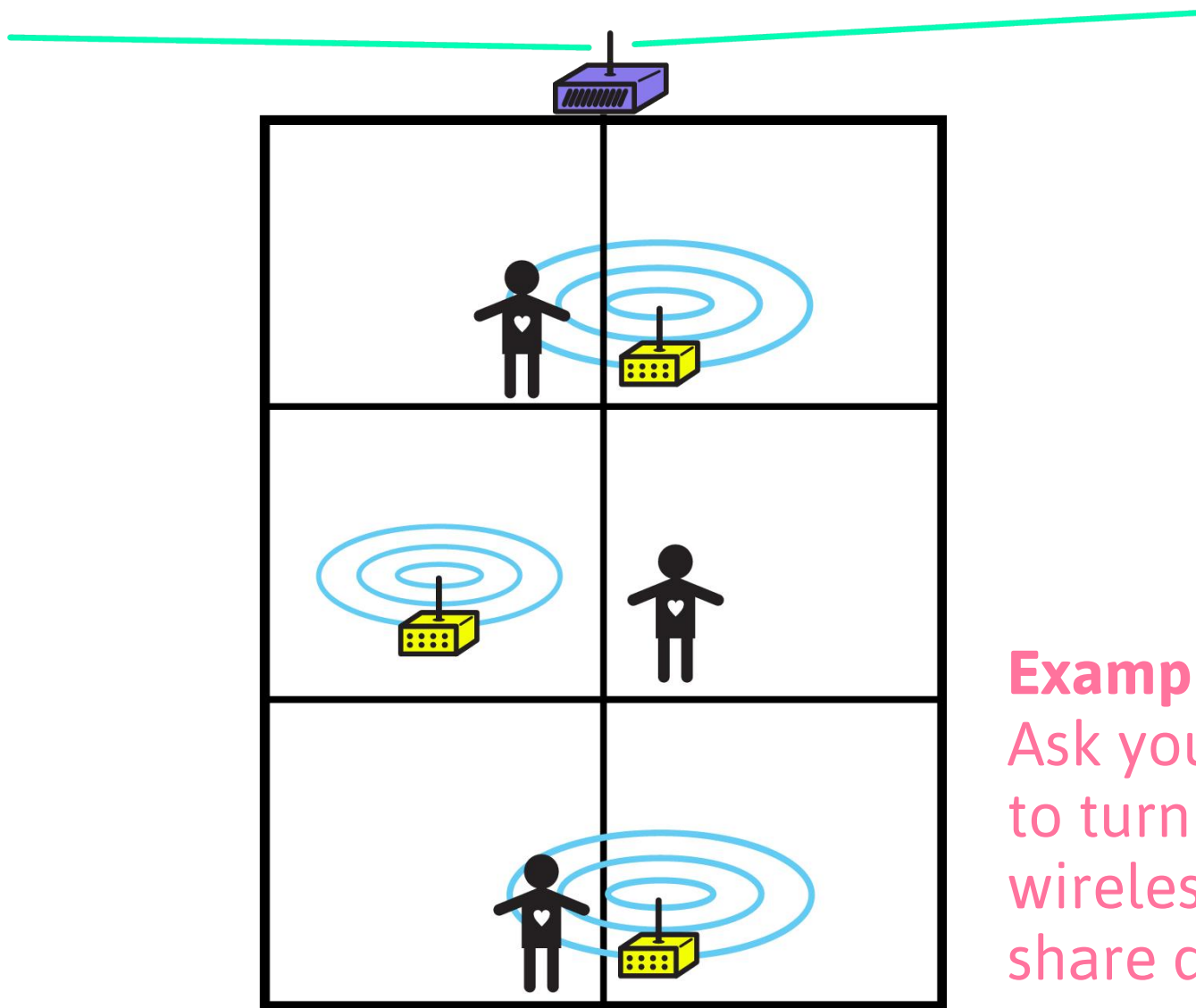
**Example Solution 1:** You can work with your neighbors to install nodes to help.

**Problem 6:** A hill blocks the links to your nearby neighbors.



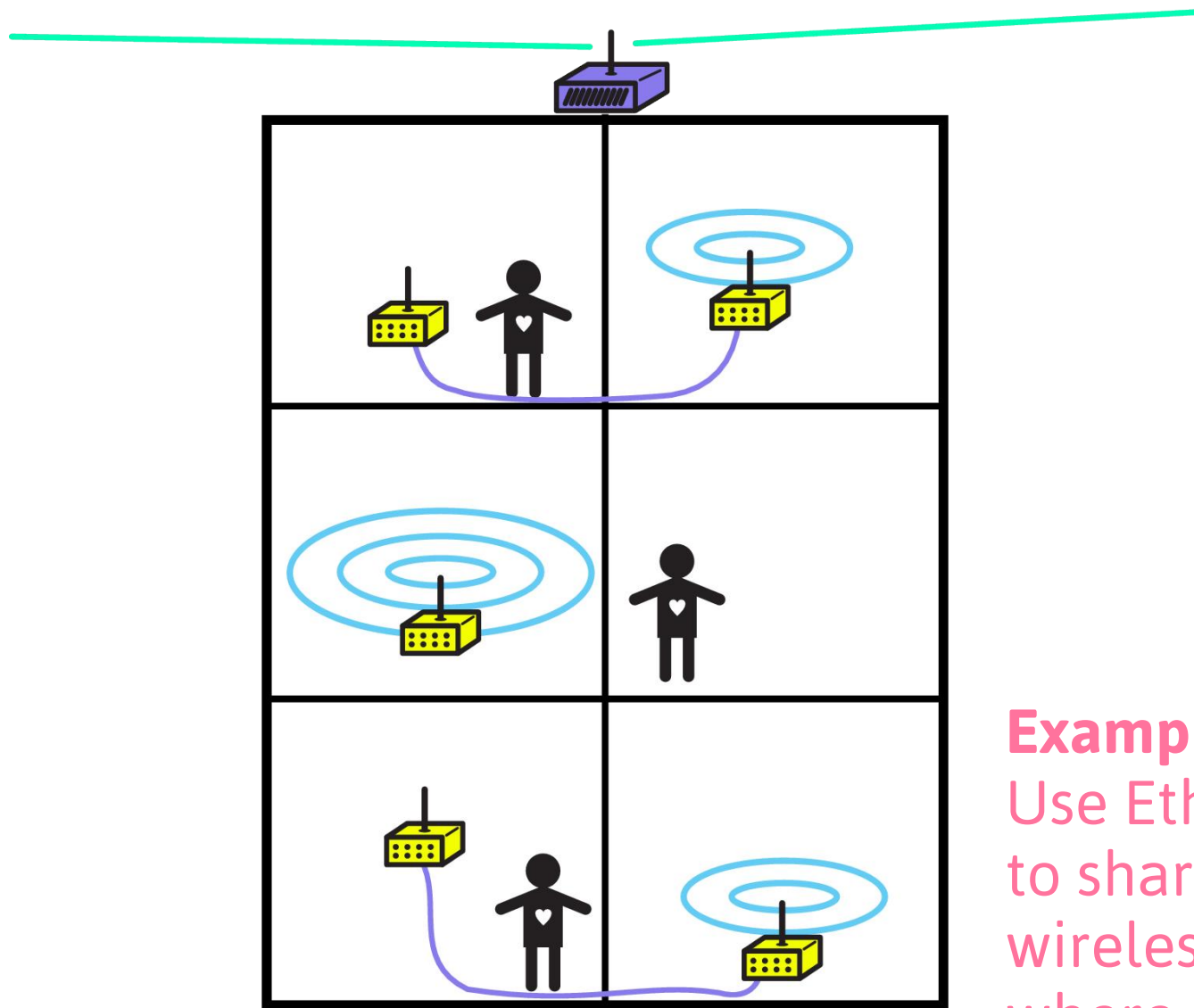
**Example Solution 2:** Find a way to put a node on the top of the hill.

**Problem 7:** The number of wireless signals in your building causes slow connections on the mesh.



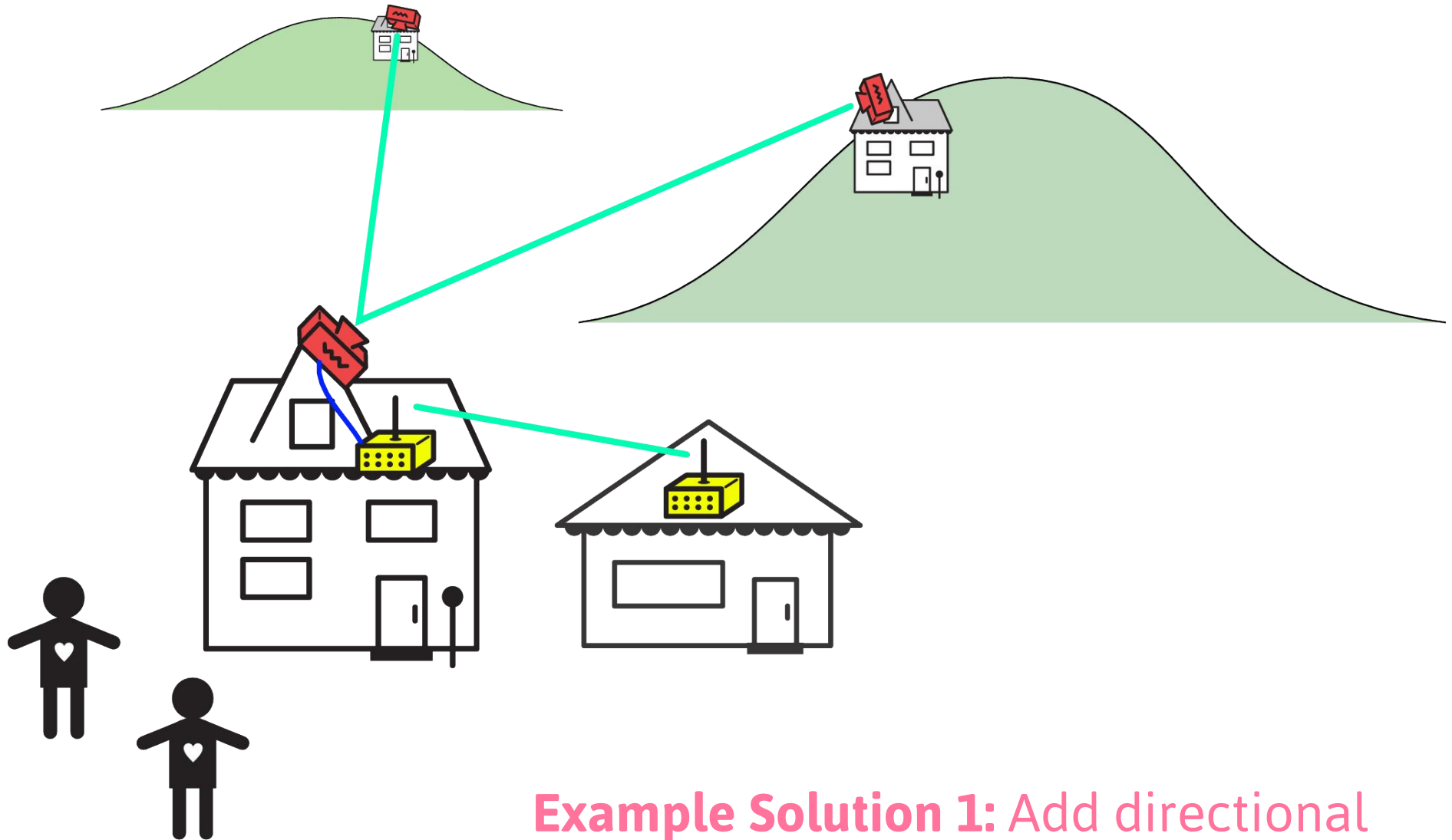
**Example Solution 1:** Ask your neighbors to turn down their wireless power, or share devices and connections.

**Problem 7:** The number of wireless signals in your building causes slow connections on the mesh.



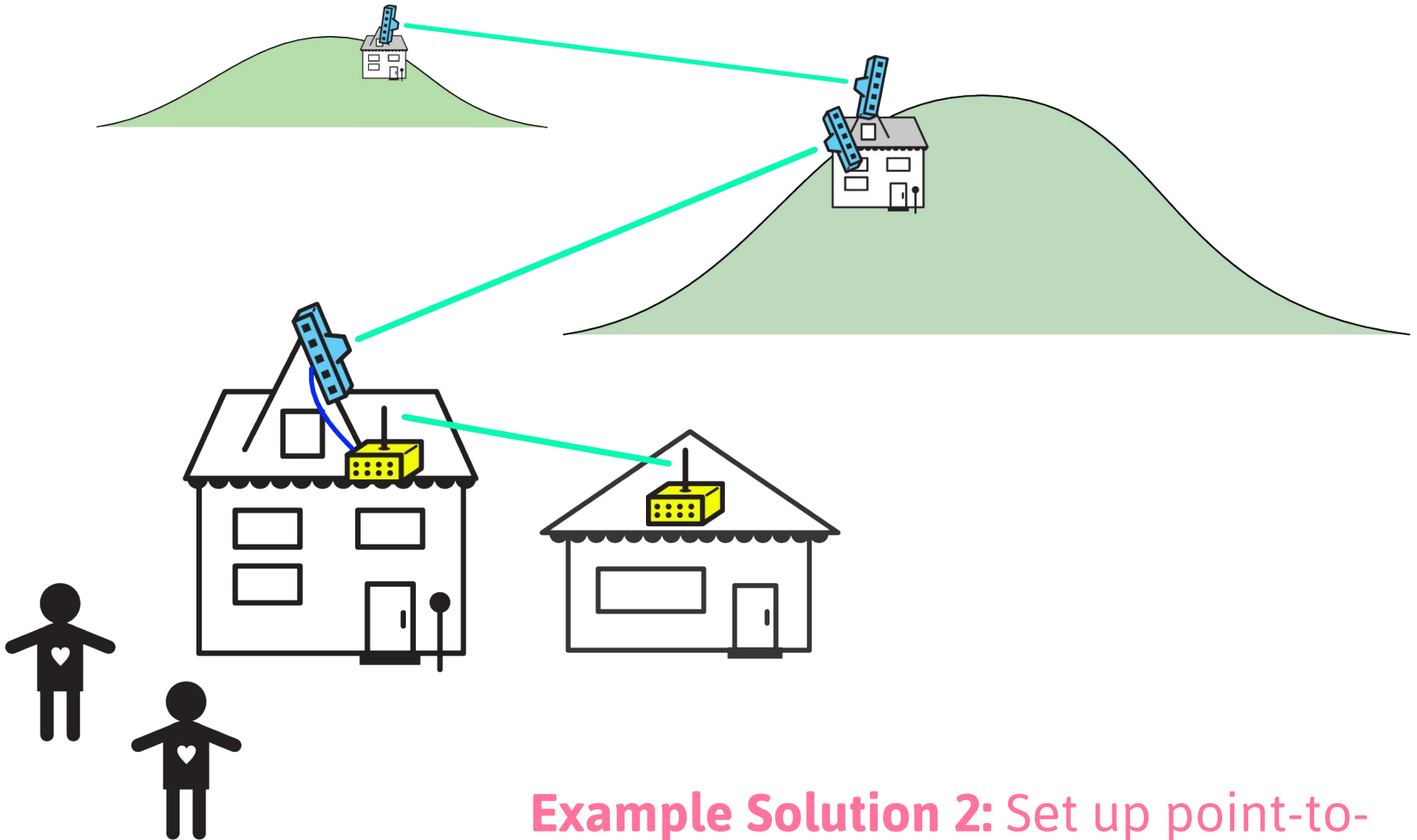
**Example Solution 2:** Use Ethernet cables to share and disable wireless on routers where possible.

**Problem 8:** Two neighbors have potential links that are far away.



**Example Solution 1:** Add directional sector nodes to links far away.

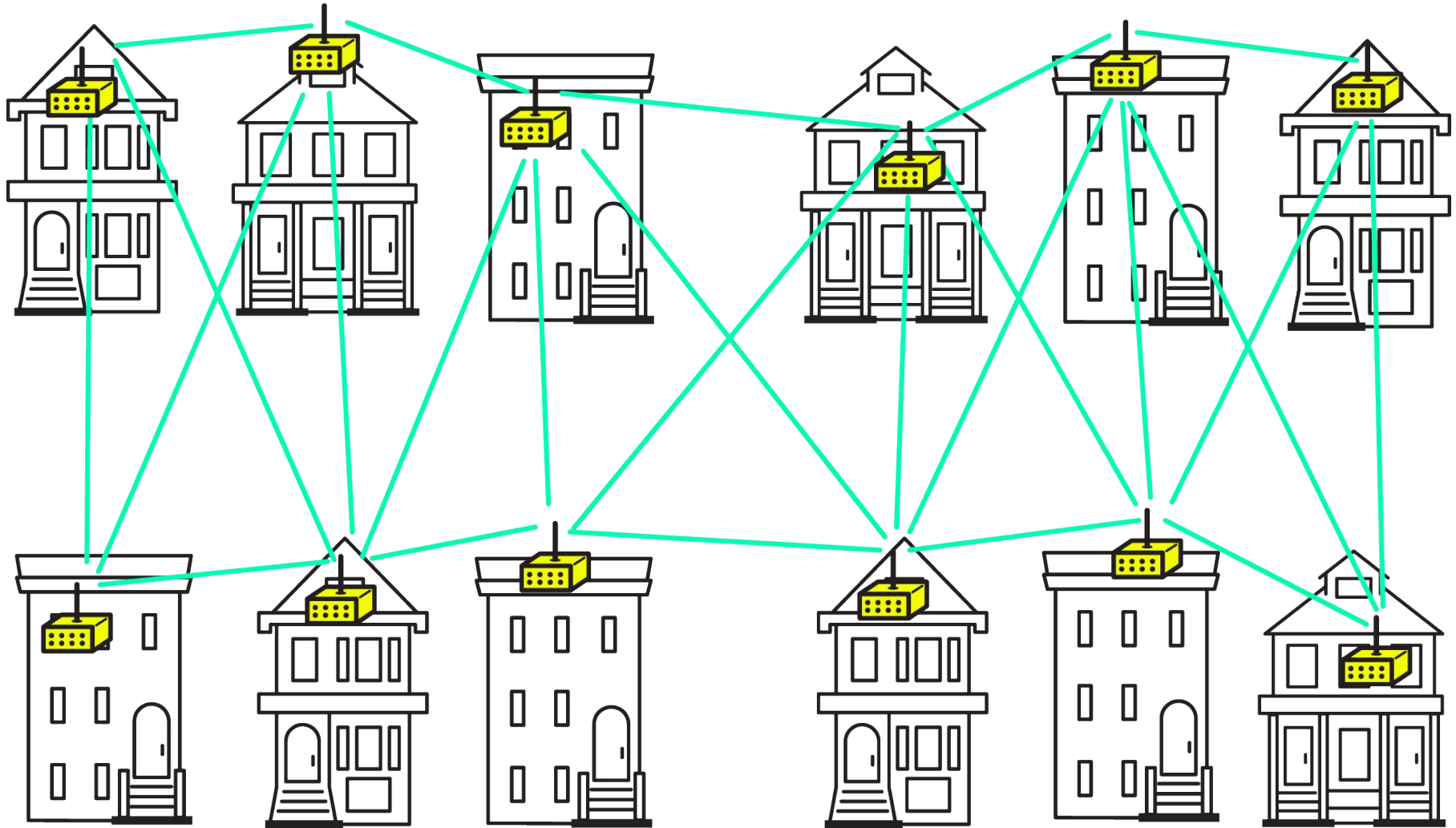
**Problem 8:** Two neighbors have potential links that are far away.



**Example Solution 2:** Set up point-to-point links to connect each location.

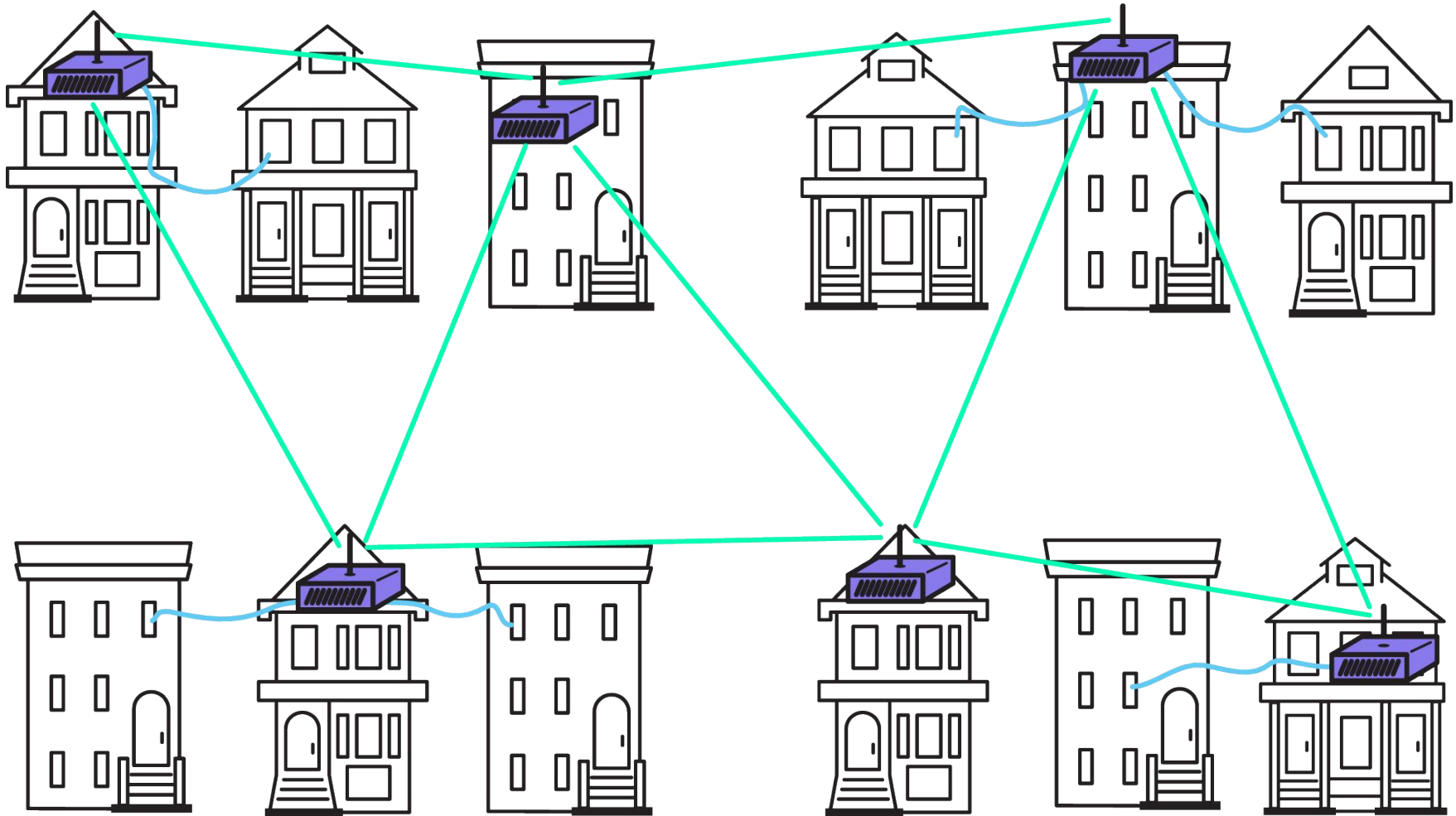


**Problem 9:** The routers seem slow and drop connections, even though the signal is very strong.



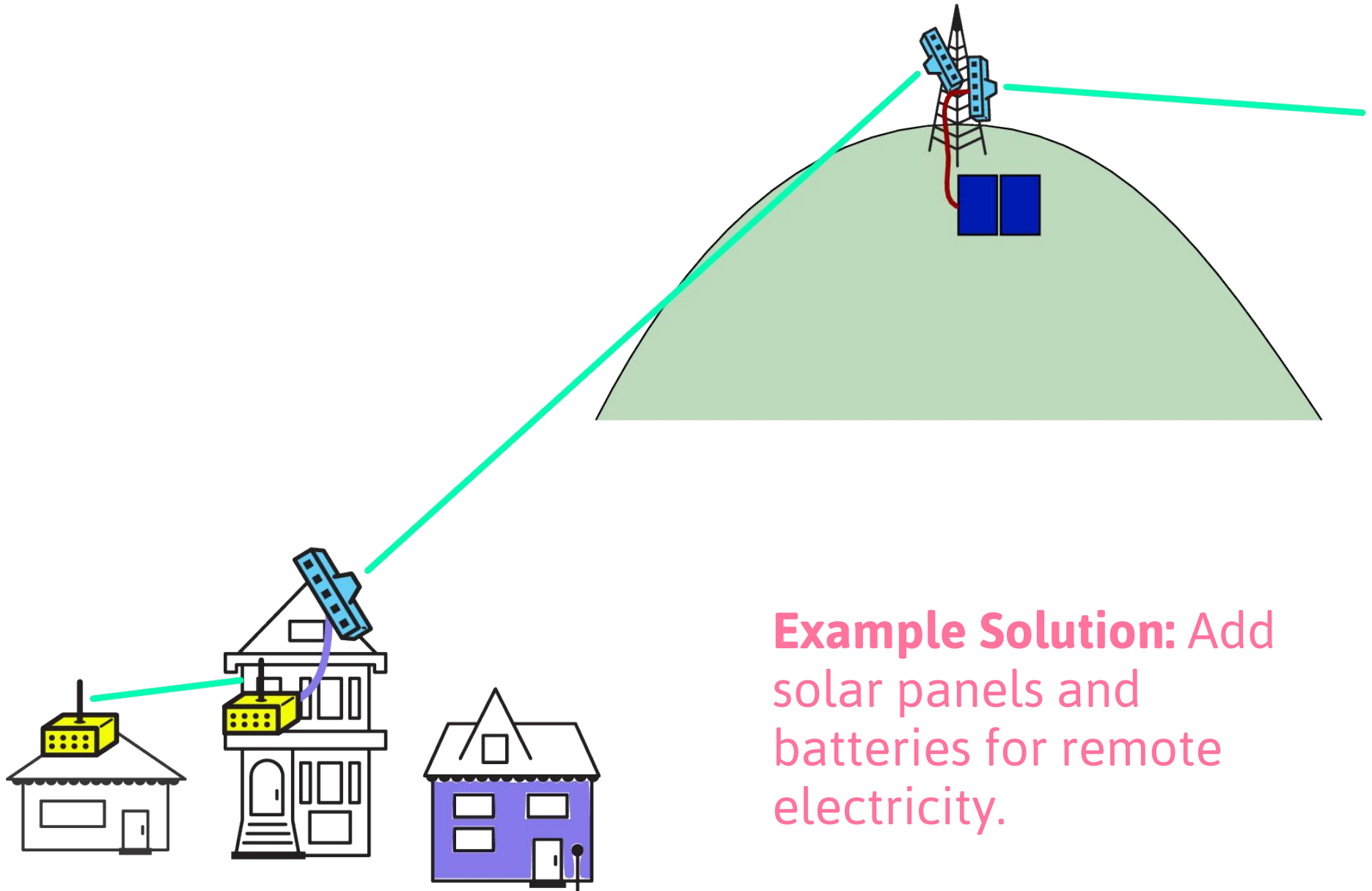
**Example Solution 1:** Turn down the power on the routers, or switch to a lower-powered type.

**Problem 9:** The routers seem slow and drop connections, even though the signal is very strong.



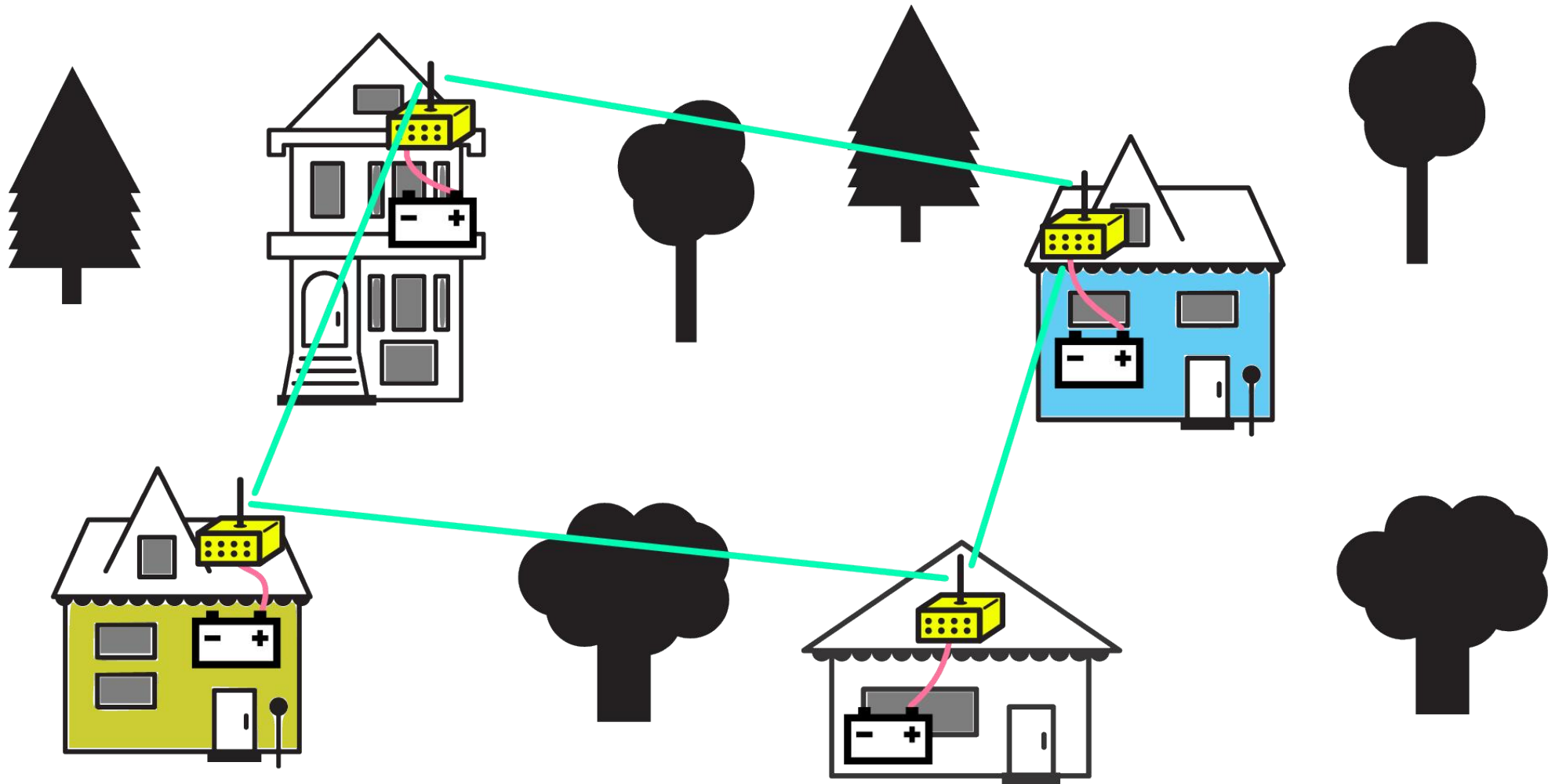
**Example Solution 2:** Remove a few nodes and have several neighbors connect to the closest node, or use Ethernet cables between buildings.

**Problem 10:** A hilltop site has no electricity, but would be perfect to connect to a far away town.



**Example Solution:** Add solar panels and batteries for remote electricity.

**Problem 11:** Your neighborhood occasionally or frequently loses electricity.



**Example Solution:** Connect the routers to backup batteries for electricity.