

## Game Lesson Materials

### Role Cards to Hand Out To Each Student (1 set per team/pueblo)

#### City Manager

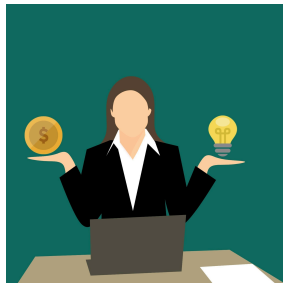


You are responsible for instituting the policies/decisions that the majority (over 50% of council members) of council members decide to do with the land in the Pueblo that you manage.

If there are an even number of city council members you may be asked to be the tie breaker.

\*You MUST have a computer so you can download the Pueblo board game and institute the changes the council members vote on. You must also be familiar with the rules and be able to answer any questions the city council members may have on the costs, impact and effect of the decisions the council members make.

#### City Clerk and Treasurer



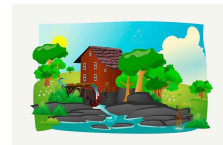
You are keeping track of the turns taken by your Pueblo, keeping track of money spent and money earned by the Pueblo, documenting population increase or decrease, happiness factor and damage caused. You will make sure the city manager is following the rules of the game. \*If the city manager is too busy running the board game and they council members need a tie breaker you may step in to vote and break the tie.

#### City Council Member #1



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You are the **Environmentalist Councilmember**-priority is to have as many trees and cleared land while you protect the river. You care about the happiness of the population and you do not want to damage the land.



### City Council Member #2



You are the **Accountant Councilmember**-wants to save as much money as possible and not spend any money if at all possible. You also want to make money for the city so if you can produce excess energy and get more money for the Pueblo or collect more taxes by increasing the population that is a good thing.



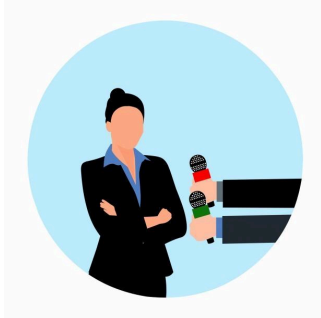
### City Council Member #3



You are the **Fossil Fuel Councilmember**-your campaign was funded by natural gas, coal and hydroelectric companies. You want at least one if not all of these facilities so you can get reelected.



### City Council Member #4



You are the **Hot Wind Councilmember**-your campaign was funded by wind and solar energy companies who have promised to get you elected as mayor if you get clean energy. You want to advocate for renewable energy that does not produce damaged land.



**City Council Member #5**



**You are the Chamber of Commerce Councilmember**-you are representing local businesses that want maximum happiness so that the population grows and they have more customers. Your goal is to get as close to 240 people as possible.



## Student Worksheet

### El Pueblo de Energia Map

Name of Your Team's Pueblo: \_\_\_\_\_

Your Team's City Manager: \_\_\_\_\_

Your Team's City Clerk: \_\_\_\_\_

List of City Council members: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Please circle your name so I know who to give a grade to for this assignment.

*\*You can use this map/grid to track and let your city manager exactly where you want to build a project, clear land or repair damaged land when you decide how to vote. Make sure you reference the part of the grid you want to change using the letter and number.*

	A	B	C	D	E	F	G	H	I	J
1	T	R	R	T	CL	T	T	T	T	T
2	T	R	R	T	T	CL	T	T	T	T
3	T	R	R	T	CL	T	T	T	T	T
4	T	R	R	T	P	P	T	T	T	T
5	T	R	R	P	P	P	P	T	CL	T
6	R	R	R	P	P	P	P	T	T	T
7	R	R	T	T	P	P	T	T	T	T
8	T	T	CL	CL	T	T	CL	T	T	CL
9	T	T	T	T	T	T	T	CL	T	CL
10	T	CL	T	CL	T	T	CL	T	CL	T

**Key:**

R=River

CL=Cleared Land

P=Pueblo

T=Trees

**Rules of the Game**

- You are a city manager, city clerk/treasurer or city councilmember for one of these Pueblo towns. Your job is to make sure the 100 residents in your Pueblo have enough energy to power their homes, their businesses and the government. You need to get to **24** in order to have enough energy for 100 people in your town. You **start with a population of 100** on your first turn. Every turn you take can impact the number of people in your town through the happiness factor. The happier people are and more energy provided the more people will want to come live in your town. BUT there are costs to different types of energy provided and some types of energy can damage the land and cause people to want to leave. The more people you have the more taxes they pay so you can build energy projects. You can reach a maximum of 240 people in your Pueblo.
- **You start with a Treasury of \$35** which you will spend in order to clear the land and construct the energy projects you need to provide the energy the people in your Pueblo need. Each turn you will see how much power is generated based on your city council's choice of how to create energy for that turn. You will also look at the damage to the land that your choice for energy has on the Pueblo.
- City manager will institute the changes that the city council members vote on each turn using a downloaded copy of the digital game. Make sure the city manager of each Pueblo downloads a copy of the spreadsheet and does not change any formulas (Do NOT touch the 2nd tab). City managers must understand and institute the decision the city councilmembers make regardless and the city manager must follow the rules of the game. You must clear land before you build where there are trees.
- City clerk/treasurer for each Pueblo will keep track of turns taken and choices voted on by council members for types of energy to provide, batteries, damaged land, amount of land taken for each project, damaged land to repair and where on the map to do these things. The city clerk is also the treasurer who tracks how much money is spent and how much money is earned from taxes and energy profits if there is extra energy provided that the Pueblo does not need.
- City council members each get a role card too. They are the ones who will vote on the energy to provide, construction to be built and where to build it. City council members must vote each turn and the majority (51% wins) and then makes their decision and tells the city manager who actually institutes the decisions made by the city councilmembers for the Pueblo their team represents.
- You can build anywhere in the Pueblo borders except in the brown squares that represent where the Pueblo people live, businesses are run, and the government exists.

Your goal is to create energy without damaging the environment and getting more people to come to your Pueblo while keeping them happy.

**City Clerk and Treasurer Tracker Worksheet**

Turn	Power Generated	Happiness	Population	Current Treasury	Money Spent	Facilities Built
0	0	7	120	\$35.00	0	None
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

**Protocols:**

**Turn Structure/How to Play the Pueblo de Energia Game**

### **1st Phase (Skip for Turn 0)**

- 1) Advance the "Current Turn" Tracker (J14) by 1.
- 2) If a facility produces Damaged Land (Coal, Natural Gas, Hydroelectric Dam, Nuclear), change a number of tiles on the map equal to their respective cells in the Damaged Land Produced/turn column (X4 through X13). Take note of what changes.



### **2nd Phase**

- 1) (SKIP THIS STEP IF ON TURN 0) Players vote on whether or not to continue with the current power facilities. If yes, move on to step three of Phase 2. Debate is welcomed and encouraged, but must be ceased when the City Manager calls for a vote. The Governor/Teacher should set time limit for all Pueblo teams to vote (depending on length of class period and number of turns you want each team to take. For example, it is a 60 minute class period. You would want to give them 5 minutes to debate and vote and 1 minute for city manager and city clerk to make and track changes, building and clearing of land that city council members voted on.)
- 2) Players vote on what power facilities to construct to supply Puebla de la Energia with power. They may debate on where to place those power facilities and discuss pros and cons, but if the city manager calls for a vote, debate MUST cease and they must vote.
- 3) Players vote on any remaining issues--cleaning up Damaged Land, tearing down earlier Power Facilities, regrowing Trees, etc.

### **3rd Phase**

- 1) Players spend money from the Treasury to enact any of the plans they approved in the Second Phase. If they run out of money, those plans do not happen. Adjust the map accordingly (change dropdown menu options on various tiles to different dropdown menu options, reflecting the player's choices. City clerk/treasurer records the Money they spent in the "Money Spent" column (Cells H17 to H26). Add Facilities Built if you so choose (I17 to I26).
- 2) The Round ends. City Clerk records any changes in the Happiness (E17 to E26), Population (F17 to F26), and Current Treasury (G17 to G26) tracks. Add Power Generated (Q2) into the Power Generated Track (D17 to D26) (Optional).



### **Making Space for Energy Projects and Healing Damaged Land**


Each energy project takes up a certain amount of space and may also cause damage. You must clear land BEFORE you can build these projects.

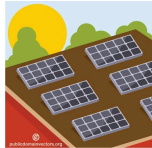
This is the size of space you will need to build each of these energy projects. Remember that you can NOT build anything on the brown squares that represent the Pueblo where people live, businesses exist and the government buildings have to exist.

**Type of Project** \_\_\_\_\_ **Size Required**

Wind Turbine 

1x
1

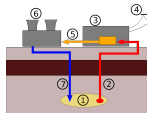
1x1 

PV Solar Panel 1x1 

Large Battery 2x2

Geothermal 

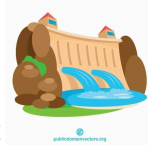
	2x

2x2 

Natural Gas 

	2
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2x2

Hydroelectric 2x4 

2x	
4	

Coal 3x3


3x		
3		

2x	
4	

Nuclear Power 4x4

Concentrated Solar Power 4x4

4x			
4			





<b>Name of Construction</b>	<b>Cost</b>	<b>Build Time</b>	<b>Power Generated</b>	<b>Description</b>
Trees	\$1	Instant	0	This is what it costs to reseed a given tile of land and turn Cleared Land back into Trees. This can only be done on Cleared Land.
Cleared Land	\$1	Instant	0	This is what it costs to clear Trees from a given tile and turn it into Cleared Land.
Damaged Land	\$1	Takes 1 turn to clean	0	May replace either Trees or Cleared Land. You may spend \$1 to clean up Damaged Land and convert it into Cleared Land.
UNDER CONSTRUCTION	\$0	Instant	0	Some facilities take time to build. Change the Tile to this to reflect the ongoing construction.
Wind Turbine	\$1	Instant	1	Must be built on Cleared Land. Non-dispatchable, so it must be paired with a Large Battery in order to provide power.
Photovoltaic (PV) Solar	\$2	Instant	2	Must be built on Cleared Land. Non-dispatchable, so it must be paired with a Large Battery in order to provide power.
Large Battery	\$3	Instant	See Wind turbine and PV Solar	Must be built on Cleared Land. Provides electricity storage for Wind Turbines and Photovoltaic Solar cells. Only provides 10 Electricity Storage per Battery.
Geothermal	\$18	Instant	12	Must be built on Cleared Land. Slightly more expensive than Natural Gas facilities, but environmentally cleaner.
Natural Gas	\$15	Instant	12	Must be built on Cleared Land. Provides a comparable amount of electricity to Geothermal Energy, but is cheaper. Also is more harmful to the environment. Adds 4 Damaged Land per turn around the facility.
Hydroelectric Dam	\$40	1 turn of Under Construction	30	Must be built on Cleared Land, and must be built straddling a River (four center squares must be over a River, four outside squares must be over Cleared Land). Provides a large

				amount of energy, though has an impact on farming soil downstream. Produces 2 Damaged Land per turn, spreading from around the Dam.
Coal	\$35	1 turn of Under Construction	36	Must be built on Cleared Land. Provides significant power, but is not environmentally friendly. Adds 6 Damaged Land per turn around the facility.
Concentrated Solar Power (CSP)	\$60	1 turn of Under Construction	45	Must be built on Cleared Land. Provides incredible amounts of Power, but is pricey. Environmentally clean, though.
Nuclear Power	\$60	1 turn of Under Construction	60	Must be built on Cleared Land. Provides INCREDIBLE amounts of Power, but is pricey, and environmentally damaging. Adds 12 Damaged Land per turn around the facility.

**Reflection Worksheet on**  
**El Pueblo de Energia Game**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Period: \_\_\_\_\_

1. What was the name of your Pueblo team? \_\_\_\_\_
2. What was your role for the Pueblo? \_\_\_\_\_
3. Did you enjoy your role or would you rather have a different role next time you play? \_\_\_\_\_
4. If so, what role would you like to have next time? Why? \_\_\_\_\_  
\_\_\_\_\_
5. Did you find it difficult to fulfill your role? \_\_\_\_\_  
Why or why not? \_\_\_\_\_
6. Did your personal beliefs conflict with the role you were assigned? \_\_\_\_\_
7. Did you try to negotiate with the other people on your team to convince them to vote a certain way? \_\_\_\_\_
8. What factors were the most important to your role in deciding what to build?  
\_\_\_\_\_
9. What factors were the most important to your role in deciding where to build?  
\_\_\_\_\_
10. What factors were the most important in your role in deciding how much energy to produce? \_\_\_\_\_  
\_\_\_\_\_
11. Did your group end up damaging any land? \_\_\_\_\_

12. Did your group lose or gain any people? \_\_\_\_\_
  13. Did your group produce any extra energy? \_\_\_\_\_
  14. Did your group end up repairing any damaged land? \_\_\_\_\_
  15. Did you feel like you needed more turns to build what you wanted? \_\_\_\_\_
  16. Did this game give you a better understanding of how decisions are made by actual elected officials when it comes to getting energy for residents? \_\_\_\_\_ If so, how? \_\_\_\_\_
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