# Rattlers Power Belleview


The Rad Rattlers

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# The Rad Rattlers

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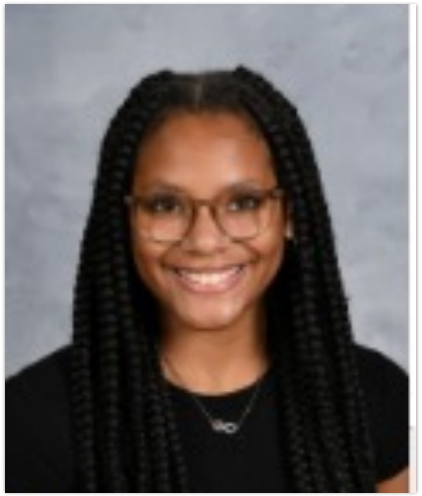
Facilitator



Amya Hernandez

Editor

Briana Stephens

Designer

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Presenter

# Traditional Power Grids:

Traditional power grids have been used for decades, but they are known to have a few disadvantages.

## Disadvantages:

- [illegible]
- [illegible]
- [illegible]

# Smart Grids:

A smart power grid is new technology that consists of controls, smart meters, computers, and automated systems to better provide for current and future energy needs.

## Advantages:

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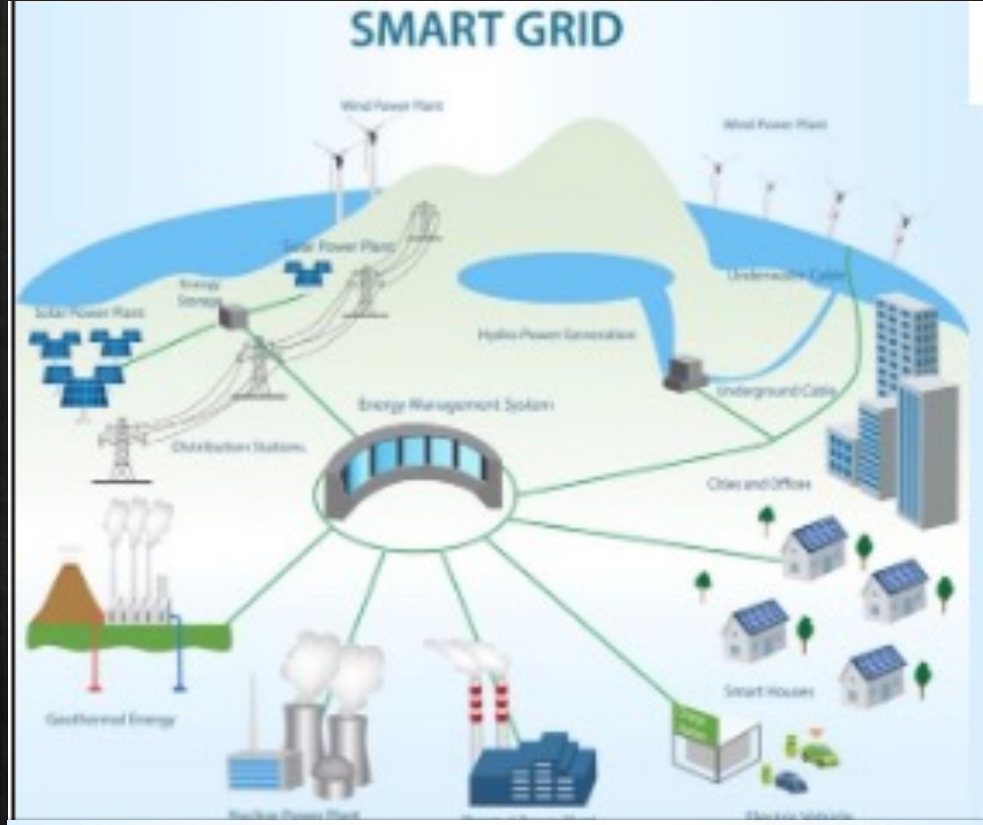
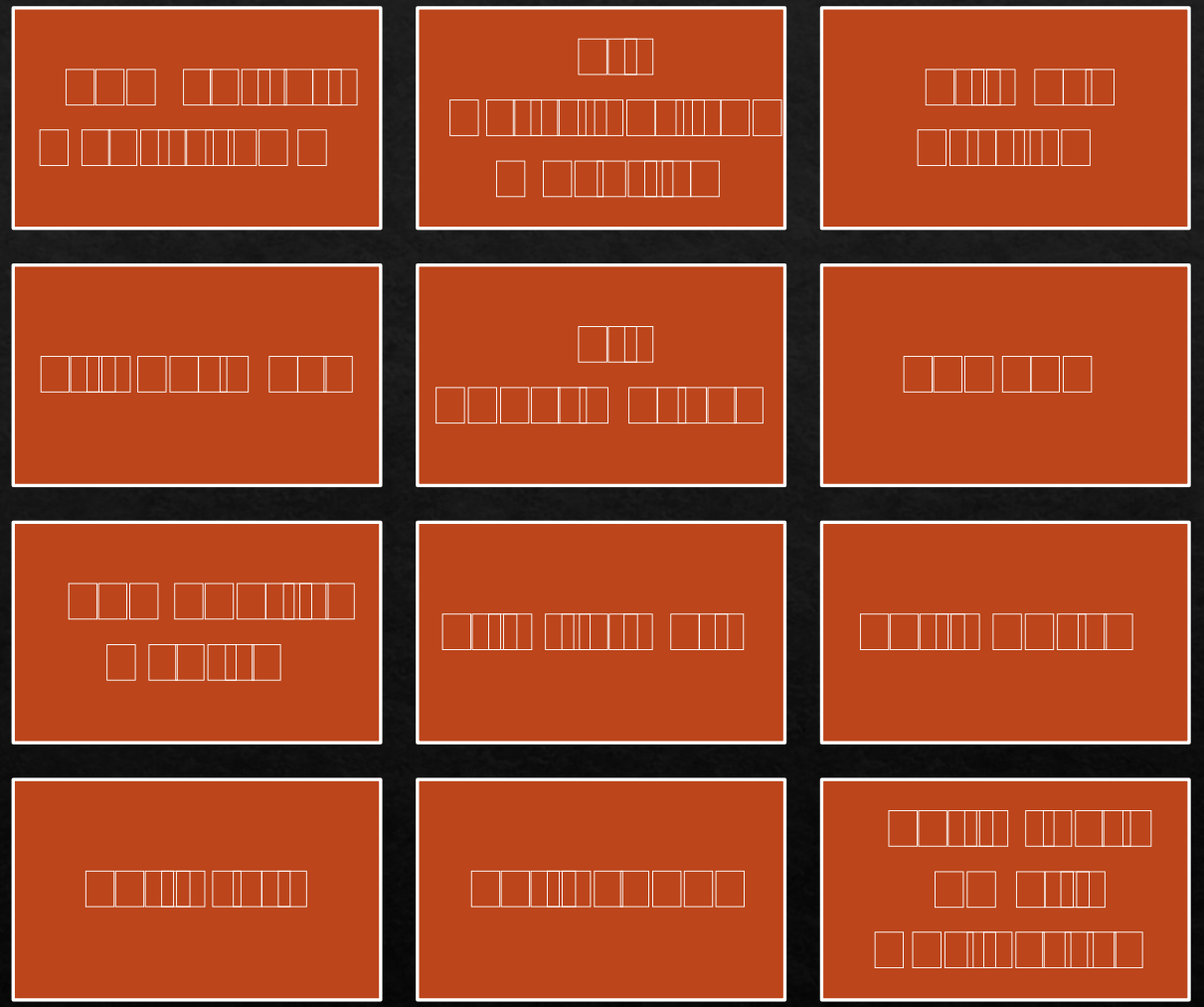
- [illegible]
- [illegible]



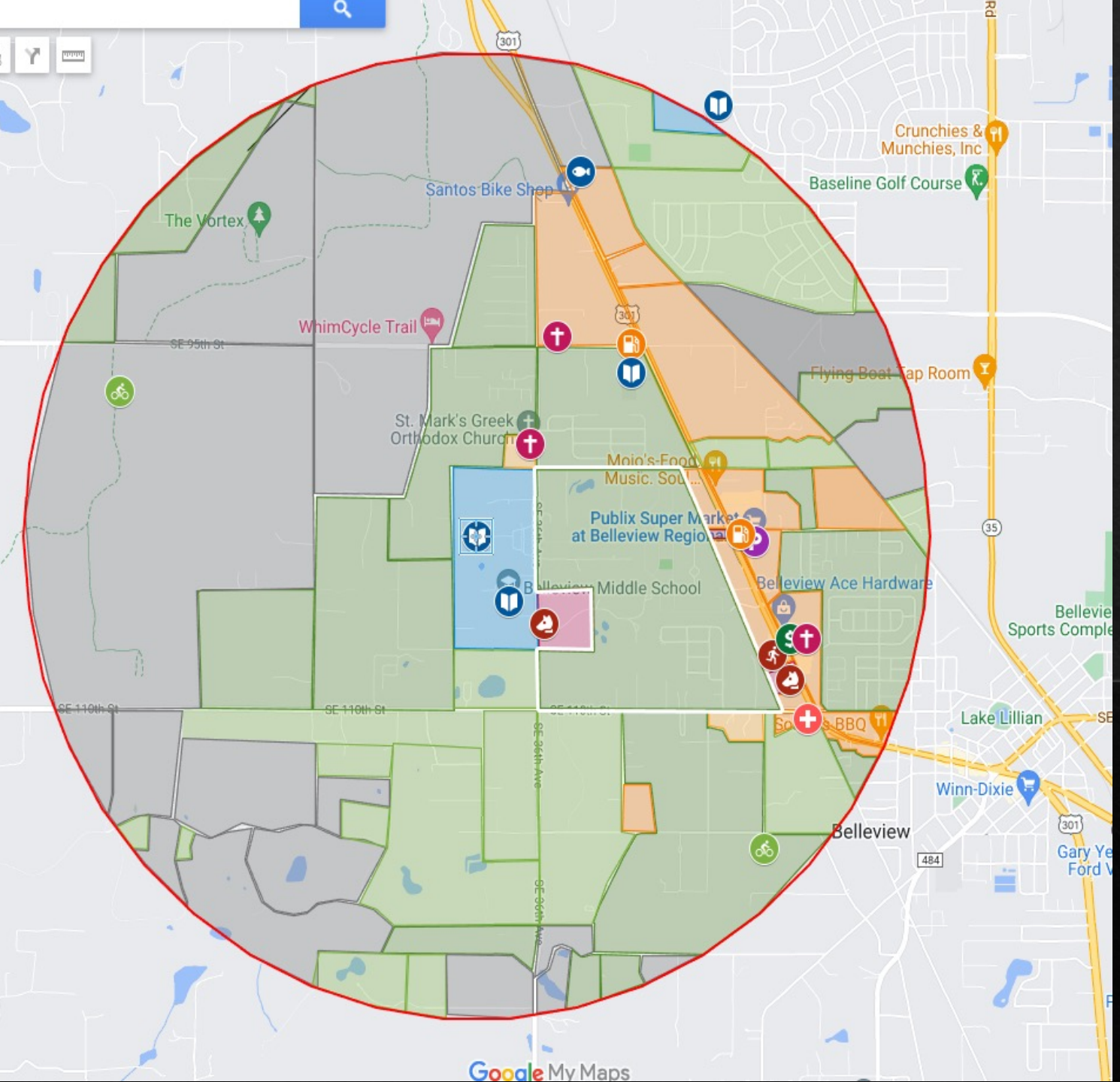

# [illegible]

[illegible]

[illegible]



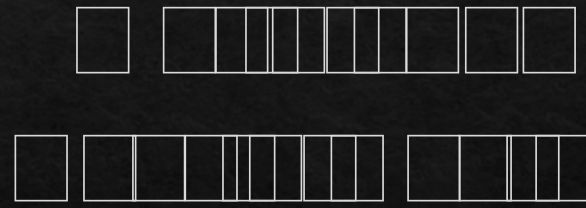
# Mapping the System




## LEGEND:

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

| User Type | Daily Cycle Notes | Yearly Cycle Notes |
|---|---|---|
| Residential | Peaks during the day | Peaks during the summer |
| Church | Peak during the day | Peaks during spring and winter and especially during holidays. |
| Medical center | Peaks during the day | Peaks during summer |
| Hospital | Stays consistent throughout the day | Peaks during summer |
| School | Peaks during the day | Dips during summer and holidays |
| Pharmacy | Peaks during the day | Peaks during summer |
| Supermarket | Peaks during the day | Peaks during summer and holidays |
| Bank | Peaks during the day | Peaks during the beginning and end of each month |
| Gas station | Peaks during the day | Peaks during summer and holidays |
| Veterinarian Offices | Peaks during the day | Peaks during summer |
| Fire rescue | Peaks during the day | Peaks during summer |
| Aquatic Center | Peaks during the day | Peaks during summer |
| City hall | Peaks during the day | Peaks during summer |
| Police Department | Peaks during the day | Peaks during summer |



| | A Buildings annual use of energy per unit area | Table 1: Average Power Load | | | |
|---|---|---|---|---|---|
| User Type | Power Load per Area (kBtu/ ft²) | Power Load per Area (kWh/ft²) | Power Load per Area (kWyr/ ft²) | Average Load Area (ft²) | Total Power Load (kWyr) |
| Office | 116.4 | 34.11 | 0.00389 | 63,000 | 245 |
| Church | 58.4 | 17.121 | 0.00195 | 3000 | 6 |
| Medical center | 232.8 | 68.23 | 0.00779 | 326000 | 2539.54 |
| Hospital | 426.9 | 125.12 | 0.01428 | 326000 | 4655.28 |
| School | 104.4 | 30.598 | 0.00349 | 74000 | 258.26 |
| Pharmacy | 145.8 | 42.732 | 0.00488 | 14000 | 68.32 |
| Supermarket | 444.0 | 130.13 | 0.01486 | 50000 | 743.0 |
| Trail | N/A | N/A | N/A | N/A | N/A |
| Bank | 209.9 | 61.52 | 0.00702 | 4,066 | 29 |
| Gas station | 883.5 | 258.94 | 0.02956 | 7000 | 206.92 |
| Veterinarian offices | 145.8 | 42.732 | 0.00488 | 63000 | 307.44 |
| Police department | 124.9 | 36.61 | 0.00418 | 11000 | 45.98 |
| Aquatic Center | 112.0 | 32.825 | 0.00375 | 7000 | 26.25 |
| City Hall | 109.6 | 32.122 | 0.00367 | 40000 | 146.8 |
| Fire Rescue | 124.9 | 36.606 | 0.00418 | 14000 | 58.52 |

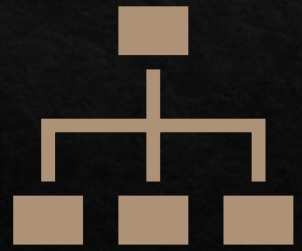
# High Priority Power Load

| | Power Load per area (kBtu/ft2) | Power Load per area (kWH/ft2) | Power Load per area (kWyr/ft2) | Total Power Load (kWyr) |
|---|---|---|---|---|
| Emergency room | 232.8 | 68.23 | 0.00779 | 2539.54 |
| Veterinarian Hospitals | 145.8 | 42.732 | 0.00488 | 307.44 |
| Gas Station | 883.5 | 258.94 | 0.02956 | 206.92 |
| Pharmacy | 145.8 | 42.732 | 0.00488 | 68.32 |

# Things That We Considered

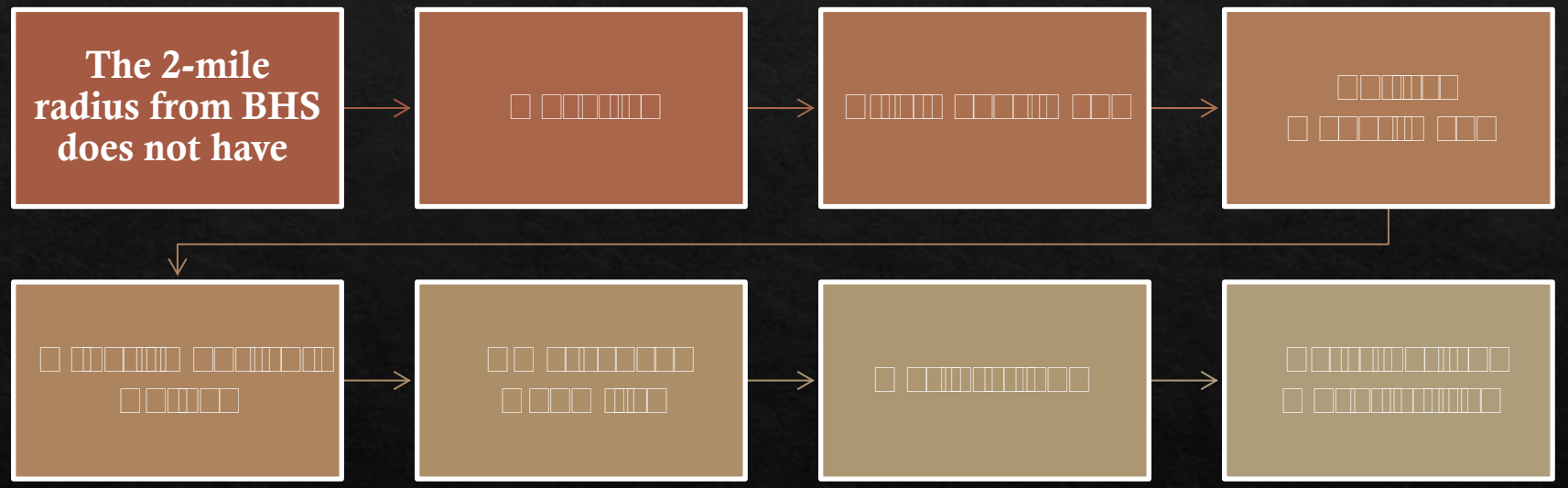
**Most gas stations do not have generators in our area.**

**By raising their priority, people can get gas for their own generators.**

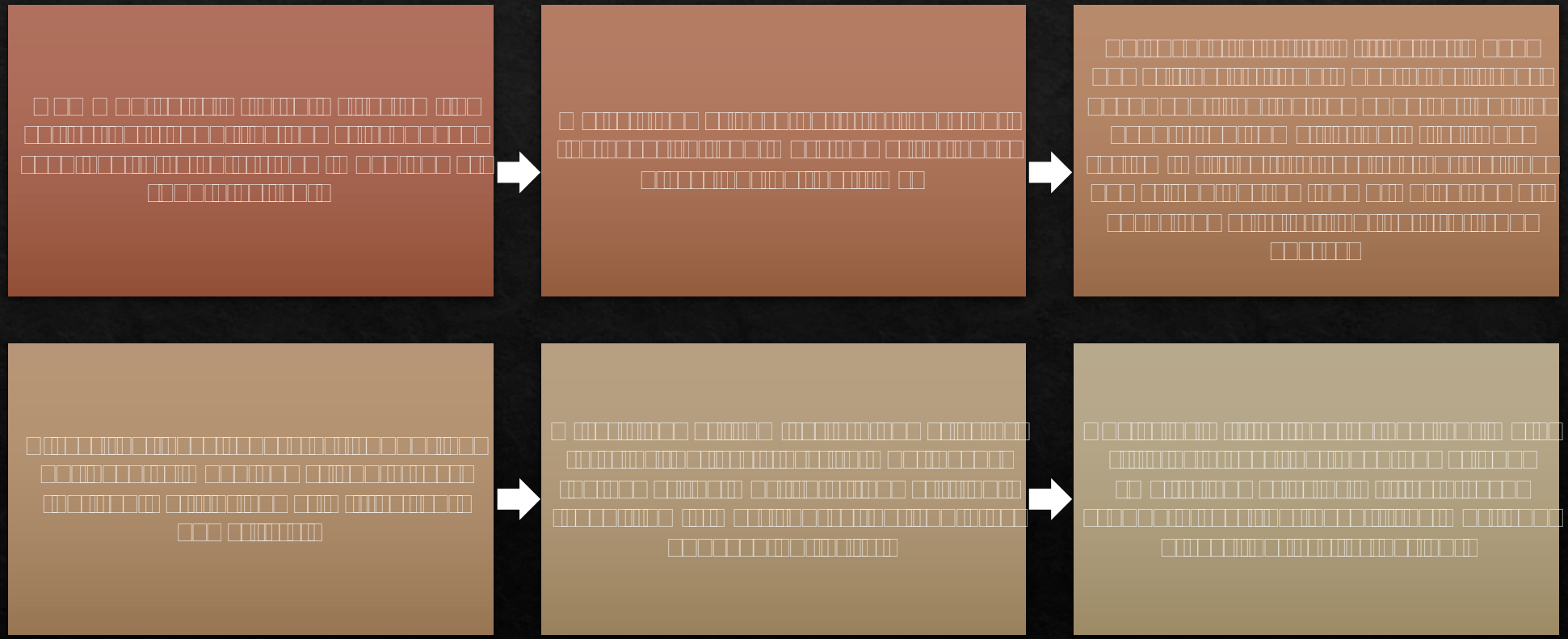


**Because most people in Belleview have generators, with the gas, they will already have power and we can focus on other things.**

# Things That We Considered



# Features of Our Design



| | | | |
|---|---|---|---|
| High | Emergency room (1) | 4655 | 24/7 (constant) and cycle more during summer. |
| High | Medical center (2) | 5,080 | 6am-11pm cycle to lower at other times and more during summer. |
| High | Pharmacy (1) | 68 | 24/7 (constant)and cycle more during summer. |
| High | Veterinarian Hospital (2) | 614 | 7am-10pm cycle lowers any other time but is still there in case of emergencies and cycle more during summer. |
| Mid | Banks (4) | 58 | 7am-6pm, and cycle more during the beginning and end of each month, and cycle to a lower power any other time |
| Mid | Us Postal Service (1) | 46 | 24/7 (constant) and cycle more during summer. |
| Mid | Restaurants (5) | 1055 | 6am-10pm and cycle to lower amount at any other time. |
| Mid | Supermarkets (2) | 1486 | 8am-11pm, cycle more during summer and holidays, and cycle to lower amount during non-business hours. |
| Mid | Schools (3) | 774 | 6am-5pm lowers supply during summer and at any other time but is still there in case of emergency (is a shelter). |
| Low | Churches (3) | 18 | 9am-5pm, cycle more during spring and winter and during holidays, and cycle to a lower amount any other time but there for emergencies (used for shelter). |
| Low | Residential areas | 30 | 24/7 (constant) |
| Least | Trails (2) | 6 | After dark for light- is not a high priority- |
| **High** | **Gas Station** | **414** | 5am-12am cycle to lower amount supply at any other time. |

## Places to ensure power are sent to

- Necessities
- Fire and rescue places with water for damage control.
- Places that don't have generators.

## Other special features it focuses on

- Safety
- Getting power to places as fast as possible.
- Sending more or less power during specific times and cycles.

# References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# Thank you!
# Any questions?