User roles

- **Role: Customer**
- Motivations / goals
    - I like to keep track of my monthly budget including gas prices
    - I want a interactive graph that I can use to see how much I am predicted to spend on gas in the coming few months
    - I want to be able to see how weather/temperature trends affect my gas purchasing

Customer User Stories:

- User Story 1: As a customer I would like to be able to see my past gas usage in a graph format so that I can see my past purchases to make a better decision on how much gas to buy
- User Story 2: As a customer I would like to be able to see my predicted monthly cost for next month so that I know how much gas I need to buy for that coming month
- User Story 3: As a customer I would like to see the weather overlaid on my oil usage graph to be able to see how much the temperature impacted my oil usage to make a better decision on how much to buy
- User Story 4: As a customer I'd like to be able to view my predicted gas bill so I can budget properly
- User Story 5: As a customer I'd like my usage data to be presented clearly so that it is easy to understand and accessible

- **Role: Palmer Gas Admin**
- Motivations / goals
    - I want to be able to predict as accurately as possible when gas deliveries are going to be made
    - I want a sql database where I can access customers purchase history
    - I want a new method to more accurately predict users easy pay prices

Palmer Gas Admin User Stories:

- User Story 5: As a Palmer gas admin I would like to have accurate pre buy gallons so that it is more accurate than the previous system and is based on accurate data
- User Story 6: As a Palmer gas admin I would like to have the easy Pay plan be able to predict next month's cost so that an accurate amount can be displayed
- User Story 7: As a Palmer gas admin I would like our user's usage graphs to be visually appealing and easy to understand, so customers don't get upset
- User Story 8: As a Palmer gas admin I'd like the data usage graph to load in quickly so customers do not have to wait on the website long
- User Story 9: As a gas admin I would like the user usage graph to contain gas usage, average temperature, and weather trends over time so it is easy to see how the three correlate

- **Role: Developer**
- Motivations / goals
    - Have a database that incorporates both weather and oil data for a customer in an accessible SQL server
    - Have a program that takes data inputs and is able to predict up to the next 3 months of gas usage

    - Have a machine learning model that performs well to predict up to 3 months of gas usage for a customer
    - Have a UI of a graph that is a visual representation of previous gas usage and weather data collected in their area

Developer User Stories:

- User Story 9: As a developer I need to get the weather data into a sql server so that it can be accessible and ready for modeling and programing
- User Story 10: As a developer I need a program that receives both weather and previous gas usage data to be able to predict the next 3-months of gas usage for a given customer and their region so that customers can get accurate predictions based on real world metrics instead of taking the average of gas used before, which is less accurate.
- User Story 11: As a developer I'd like to have a vast amount of accurate and relevant weather data so our program predicts accurately
- User Story 12: As a developer I'd like to have as much customer usage data as possible so our program can predict accurately

Expanded user story 1:

- User story:
    - As a Customer I would like to be able to see my past gas usage in a graph format
- Definition of done
    - a user gas purchases are automatically added into sql server
    - all tasks have been completed (developed, tested, reviewed, and validated)
- Tasks
    - Create online chart (Front End Dev and UX designer)
    - Create UI prototype (UX designer)
    - Create SQL table (backend / DB developer)
    - Integrate cart into existing portal (software / integration engineer)
    - usability testing (UX designer)
- User Role
    - Customer
- Steps:
    - Open Customer Portal
        - show home screen
    - click "Analytics tab"
        - Shows graph containing users history of gas purchases
        - to my actual bill on the interactive chart

Expanded user story 7:

- User story:
    - As a developer I need a program that receives both weather and previous gas usage data to be able to predict the next 3-months of gas usage for a given customer and their region so that customers can get accurate predictions based on real world metrics instead of taking the average of gas used before, which is less accurate.
- Definition of done
    - The program executes and outputs the expected gas usage for the next 3 months
    - all tasks have been completed (developed, tested, reviewed, and validated)

- Tasks
    - Model creation
    - Model Testing
    - Program
    - Testing and Validation
- User Role
    - Developer
- Steps:
    - Model creation
        - Split data for data modeling purposes
        - Use different modeling types
            - Test against each other to see which model does the best
    - Incorporate model into program
        - Automated program that takes in customer data and is able to output the next three months predictions
    - Test and Validation

Expanded user story 9:

- User story:
    - As a palmer gas admin I want to be able to see when customers are going to be needing refills
- Definition of done
    - A Palmer Admin will be alerted as to when customers are estimated to need gas refills
    - all tasks have been completed (developed, tested, reviewed, and validated)
- Tasks
    - Create machine learning model
    - UI prototype
    - User history database
    - Find and integrate weather api
    - integrate into Palmer Gas Portal
    - usability testing
- User Role
    - Palmer Gas Admin
- Steps:
    - Open Portal
        - Land on Home Screen
    - click "Upcoming Deliveries"
        - Shows list of users that are estimated to need gas deliveries in coming weeks/months

Release planning - sprint goals

milestone	**artifact(s)**	**description / sprint goal**
planning	Planning and initial design docs	[e.g. charter; user stories]

		Develop a charter, a 2 sprint roadmap, user stories and determine a MVP.
sprint 1 - preparation	Technology selection and learning artifacts	[Decompose later into specific technologies and learning objectives] Aggregate data for use for temperature analysis ● Research suitable previous 7-year temperature data for Maine, New Hampshire, and Massachusetts. Develop data into SQL database Design Web Integration Develop Skills Needed for Project
sprint 2	increment 1 - MVP	[Describe what stories / features you hope to show to your peers in your minimum viable product (MVP) demo] A rudimentary demonstration of our prediction analysis. - A user can run the prediction algorithm and view models of predicted gas consumption based on regional temperature data and previous temperature. - A user can view statistics about the accuracy of the model.
end of semester	increment 2; tech doc	[Describe what other work you might have time to do at the end of the semester] ● UI Elements ● Develop Web Integration ● Other Weather Factors (Hurricane Data)

Developer roles and responsibilities

Example roles for developing a generic web application:

as a	**I need to**	**so that**
Research Specialist	Research/Aggregate regional temperature databases.	Developers can discuss and develop data into a usable form.
Database Developer	Generate all data into comparable, compatible SQL databases.	Application Developers can develop prediction analysis.
Application Developer	Develop a python program to generate a prediction model based on databases.	Stakeholders can see the prediction model.
Frontend Developer	Develop a view of web integration.	Developers can populate web integration with data

Work breakdown structure (WBS) / backlog

Finally, you can come up with medium-level work tasks and represent them in a WBS.

initiative	**Gitlab Epics**	**Stories / features (Gitlab sub-epics or Issues)**	**Tasks (Gitlab issues)**	**assignee(s)**
Gas&Oil Prediction Analysis	planning and initial designs	n/a	charter	
			stories	
	preparation	tech assessment/ selection	- research/aggregate different data sources for annual regional temperature data	Research Specialist
			-Create SQL table	-Database Developer
			-design UI prototype	-Application Developer (Front-End)
		skills development	-do web frameworks tutorials (?)	- Application Developer (Back-End)
			-do web ui tutorial (?)	
			-	
	MVP	feature 1:Prediction Model	-develop data comparison analysis	-Application Developer
			-develop model visualizations	-Application Developer
			-develop accuracy statistics visualization	-Application Developer
		feature 2:		