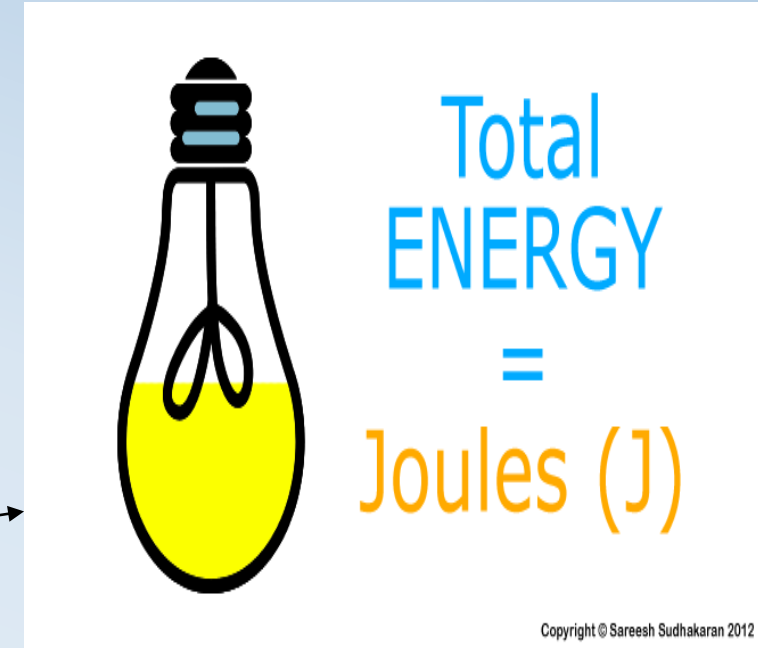


NRGY

- Boqian Yao: UI mockup designer, paper prototyping
- Peter Pan: Writer, project manager
- Yan Tan: Usability tester, writer
- Yu Song: Paper prototyping, usability tester



Overall Problems



Overall Problems



Overall Problems

- Global Warming
- Utility Managing
- Budgeting



Task: Reminders to Save Energy

- Notifications to remind users to perform tasks in case they forgot.

Task: Recording Data

- Collect information on energy usage from various sources.

Tasks



Paper Prototype

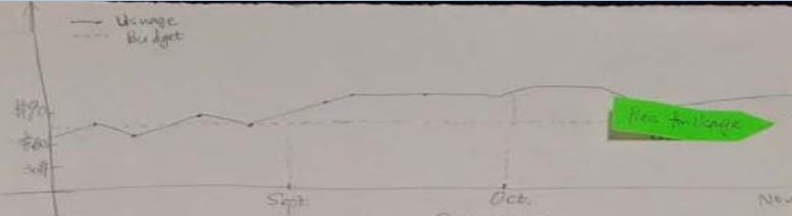
Monthly Gasoline Cost.

\$ 70.69

Driving Away

Refill History

Current Cost Analyze



Summary:
Current Month: October
Total Gasoline Usage: 20 gallons
Total Gasoline Cost: 73 dollars

Date	Gallons (GAL)	Value (\$)	Location
Oct 12 th	16 gal	46.16 dollars	3005 9 th E.
Oct 20 th	13 gal	39.25 dollars	200N, 100W
Oct 28 th	11 gal	31.33 dollars	100N, 80E
Oct 30 th	7 gal	20.49 dollars	1000S, 70E

Finish Refueling?

Back

RECORD NEW COST

New Consumption

Energy Type	Cost	Date
Gas	\$ 70.69	10/28/20
Electric	\$ 1047.64	11/20/20



Confirm

Back

Turn off List:

Available devices:

Computer A

Add

Dish Washer

Add

TV (Master Room)

Add

Oven

Add

Driving Away

Auto-Adjust AC and Heating system: ON

Turn OFF Selected devices

Set turn off list

WELCOME TO ENERGY TRACKER!

Total Consumption

\$ 888.00

Current Cost

\$ 180.00

Energy Monitor

Record New Cost

ENERGY MONITOR

Your Devices

- AC System \$ 8.02 off
- TV \$ 16.70 off
- Compters \$ 30.40 off
- Light \$ 20.00 off
- Gas \$ 68.99 off

Back

Task Two: Reminders to Save Energy

Monthly Gasoline Cost.

\$ 90.89


Driving Away

Refill History

Current Cost Analyze

Car Mode : Home Screen

Driving Away

Auto-Adjust AC and Heating
system :  ON

Turn OFF Selected devices

Set turn off list

Car Mode : Driving Away

Turn off list:

Computer A

Remove

TV (Master Room)

Remove

Available devices:

Dish Washer

Add

Oven

Add

Car Mode : Turn Off List

Turn off list:

Computer A

Remove

Available devices:

Dish Washer

Add

Oven

Add

TV (Master Room)

Add

Car Mode : Turn Off List

Task One: Recording Data

Date	Gallons (gal.)	Value (\$)	Location
Oct. 12 th	16 gal	46.16 dollars	300 S. 400 E.
Oct 20 th	13 gal	39.45 dollars	200 W, 100 N
Oct 28 th	11 gal	31.33 dollars	100 N. 800 E

Finish Refilling?

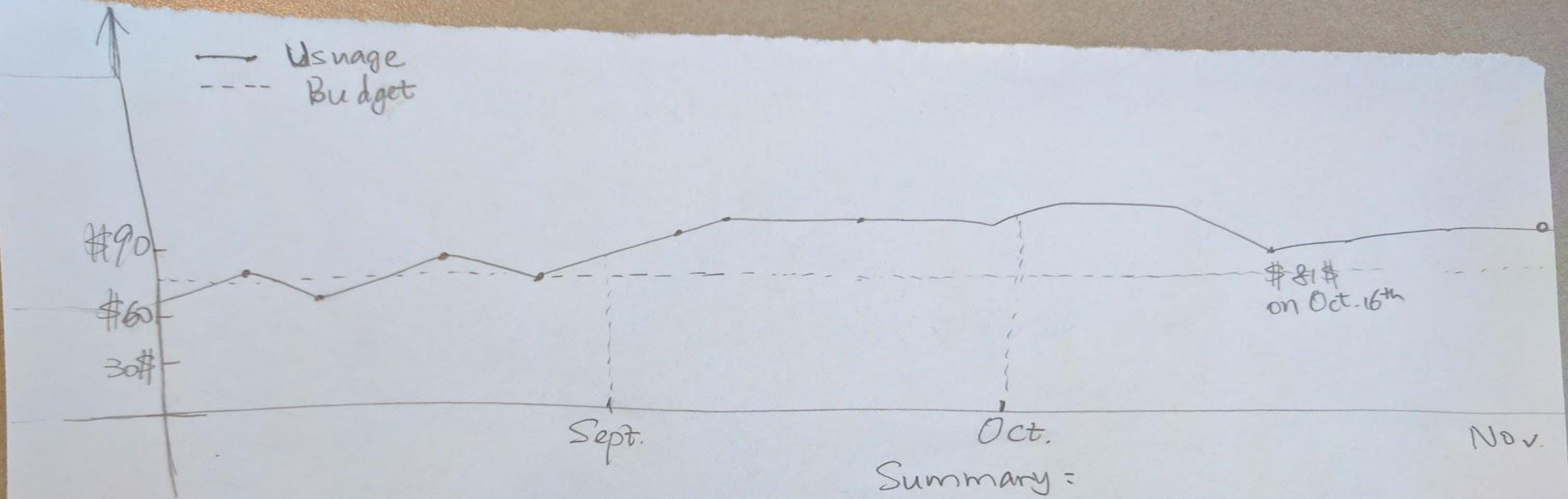
Back ←

Car Mode : Refill History

Date	Gallons (gal.)	Value (\$)	Location
Oct. 12 th	16 gal	46.16 dollars	300 S. 400 E.
Oct 20 th	13 gal	39.45 dollars	200 W, 100 N
Oct 28 th	11 gal	31.33 dollars	100 N. 800 E
Oct. 30 th	7 gal	20.49 dollars	1000 S, 700 E

Back ←

Car Mode : Refill History



Summary:
 Current Month: October
 Total Gasline Usage: 20 gallons
 Total Gasline Cost: 73 dollars

Previous Month

Back

Car Mode : Cost Summary

ENERGY MONITOR

Your Devices.

Turned on

- AC System

\$ 8.42

ON

- TV

\$ 16.74

ON

- Computers

\$ 32.45

ON

- Light

\$ 20.00

ON

- Gas.

\$ 68.99

ON

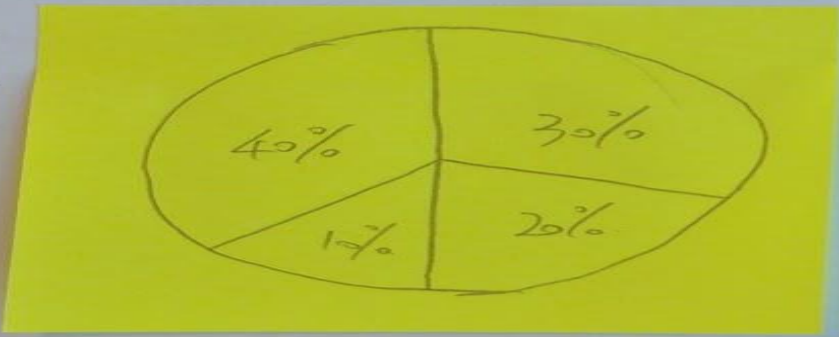
Home Mode :
Cost Summary

Back

RECORD NEW COST

New Consumption

Energy Type	Cost	Date
Gas	\$ 73.25	10/30/2016
Electric	\$ 1047.64	10/30/2016



Home Mode :
Input Data

Back

Testing Process and Results

Tasks

- Recording Data
- Reminders to Save Energy

Test Procedure

- Facilitator
- Note Taker
- Follow-up Questions
- Finish Interview

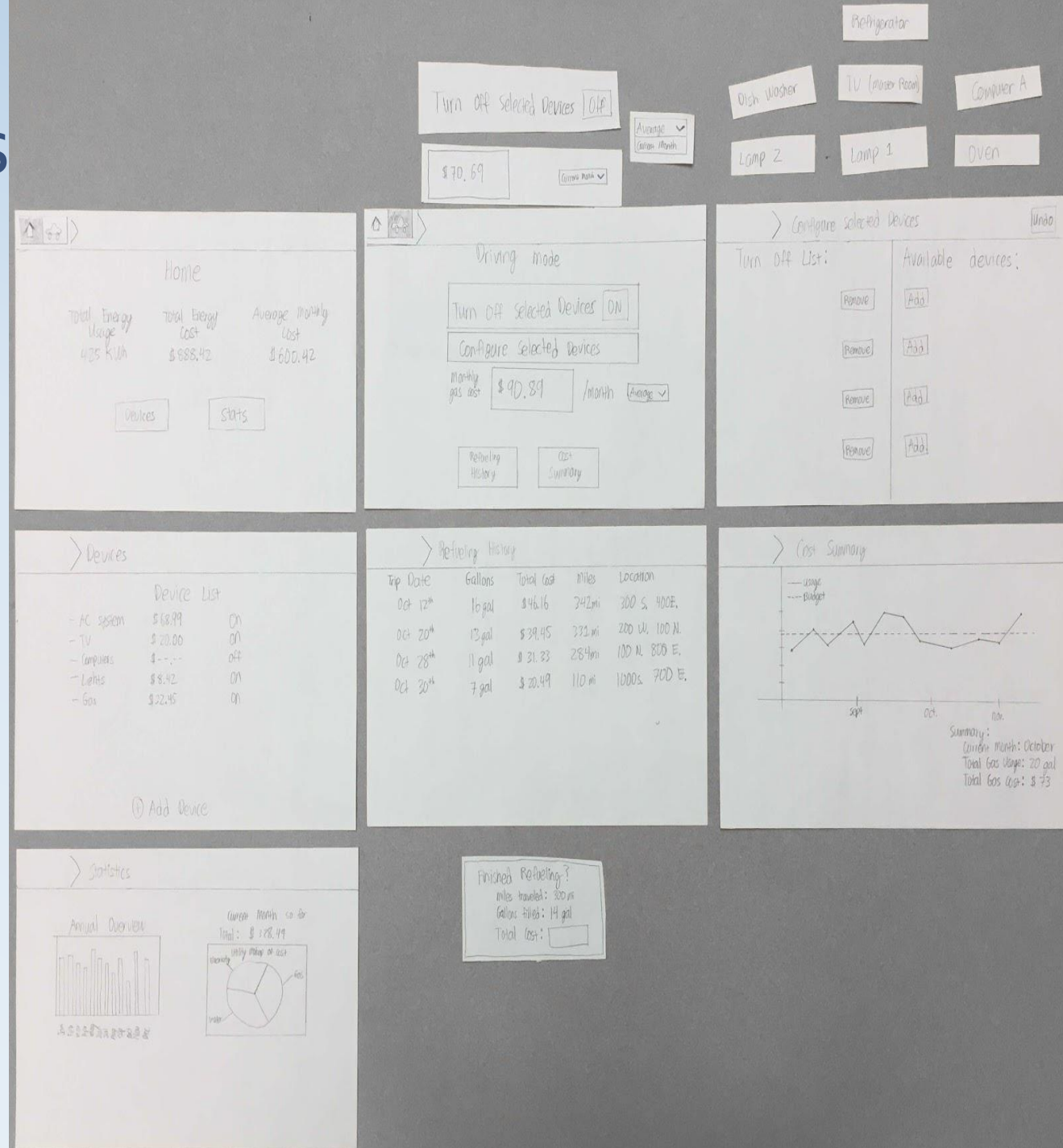
Participants

- Computer Science Student
- Economic Student
- Photographer

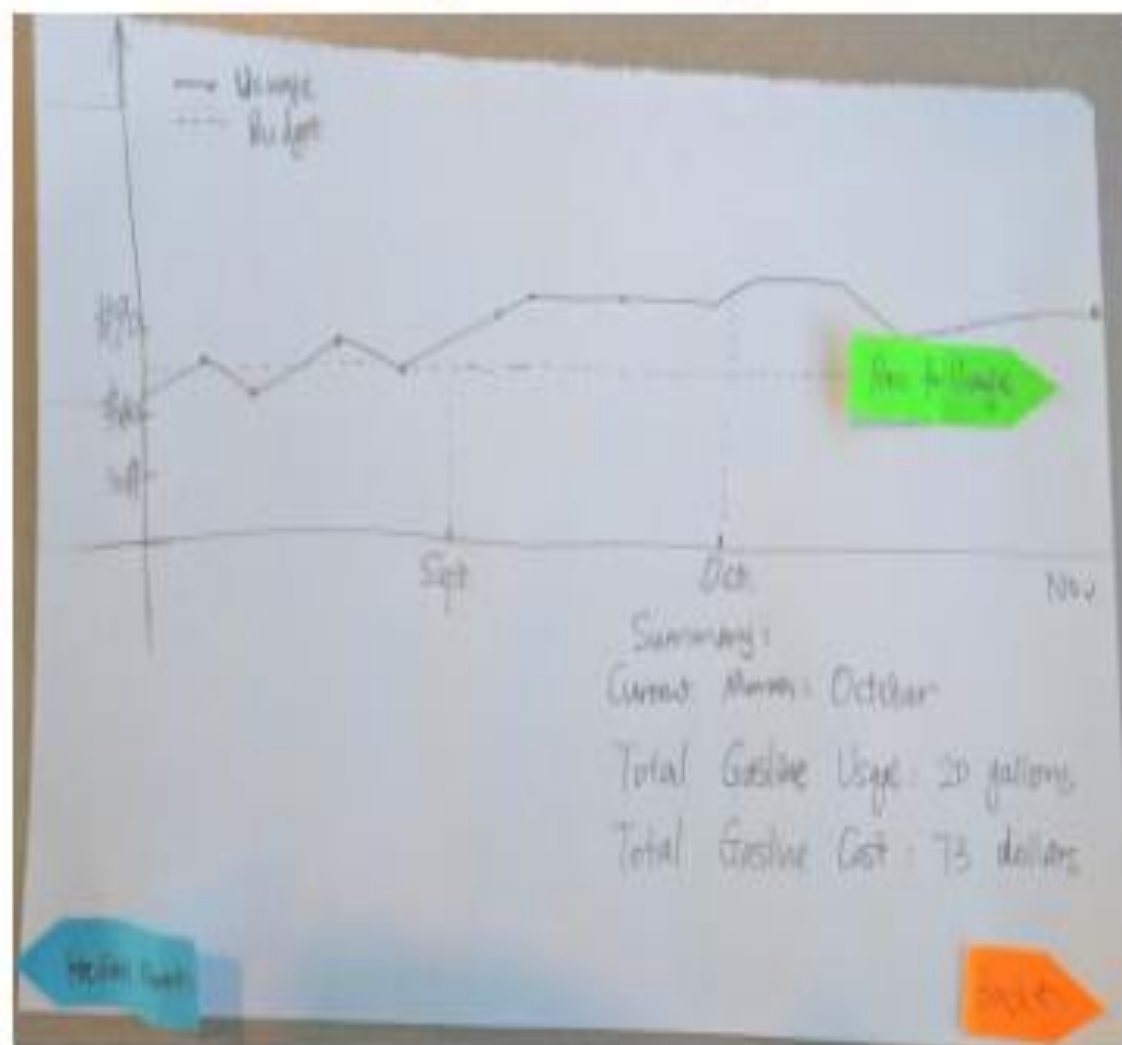


Testing Process and Results

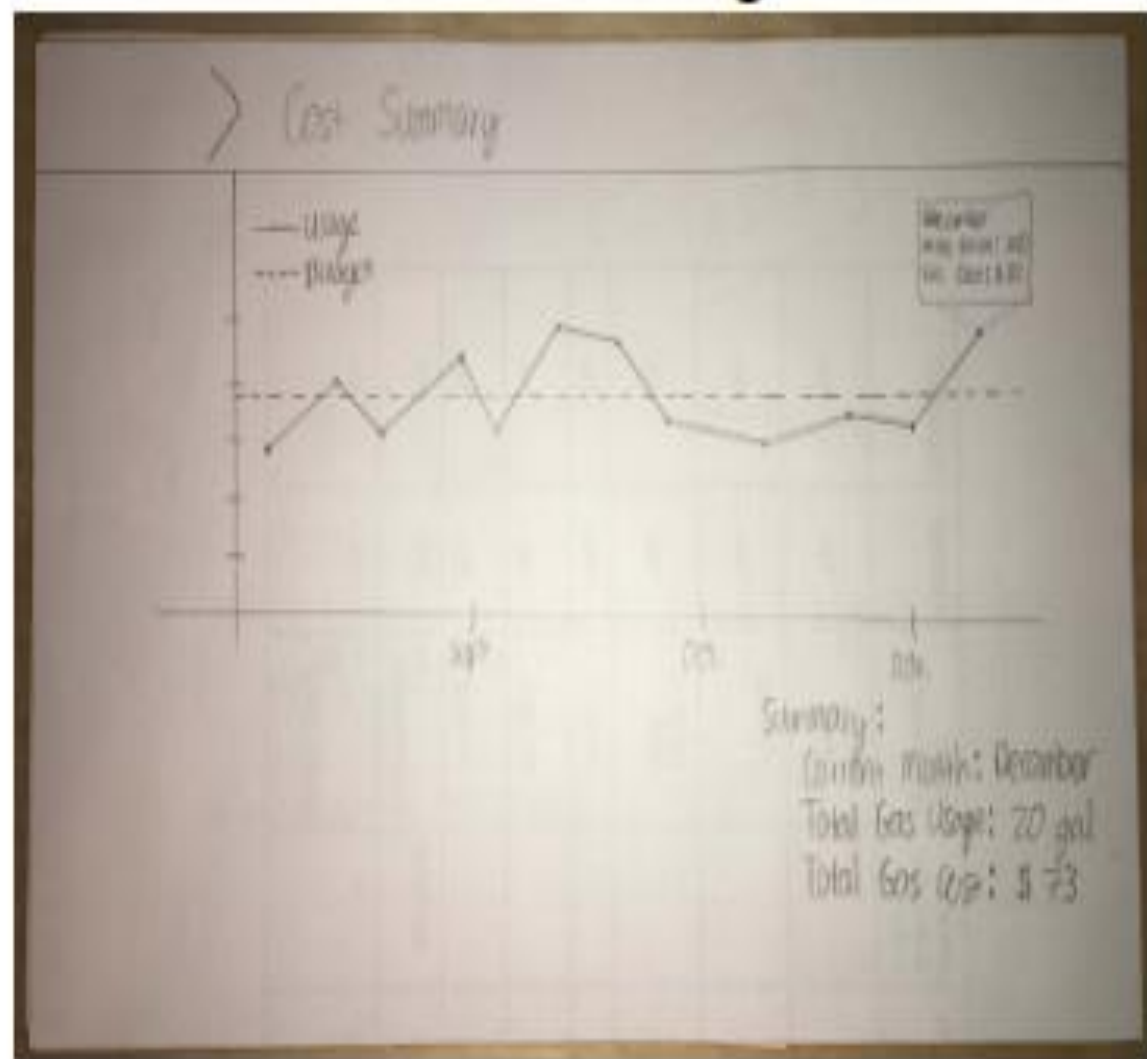
- Simplified System
- More Functionalities
- Clear data visualization
- Better Structure



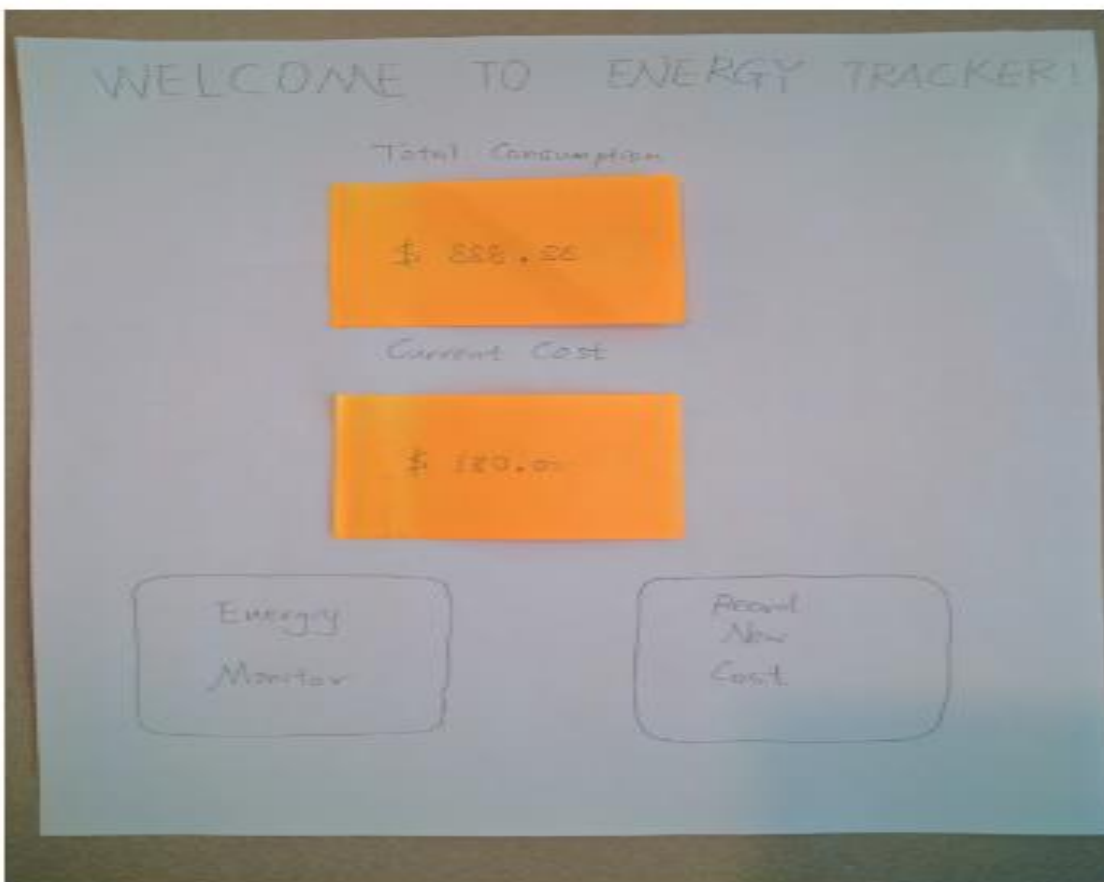
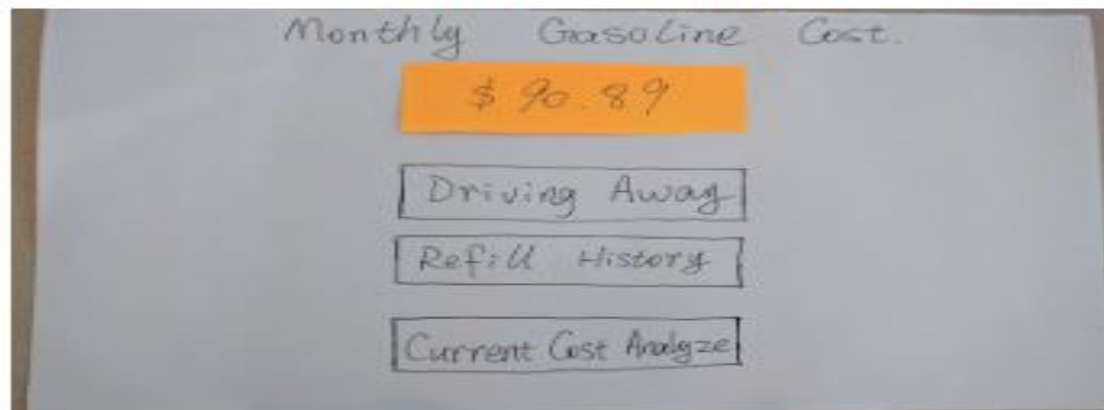
Original Design



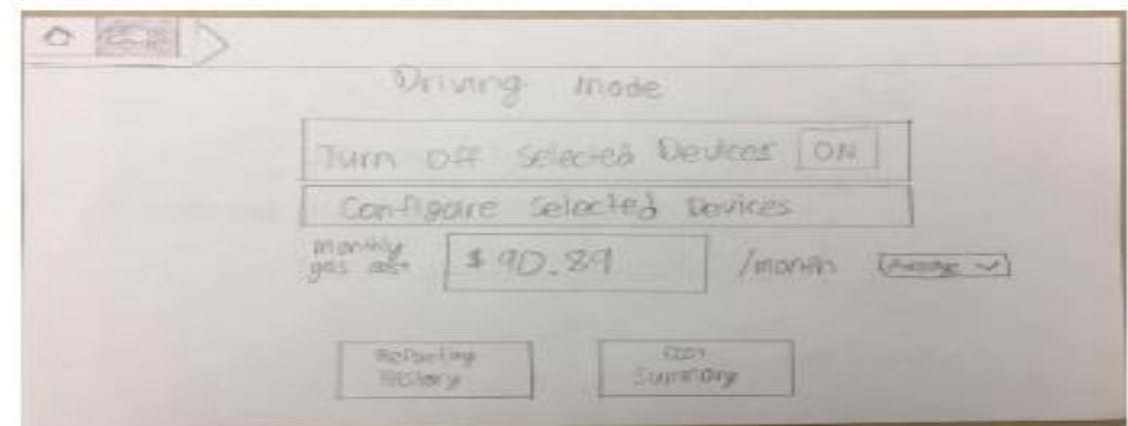
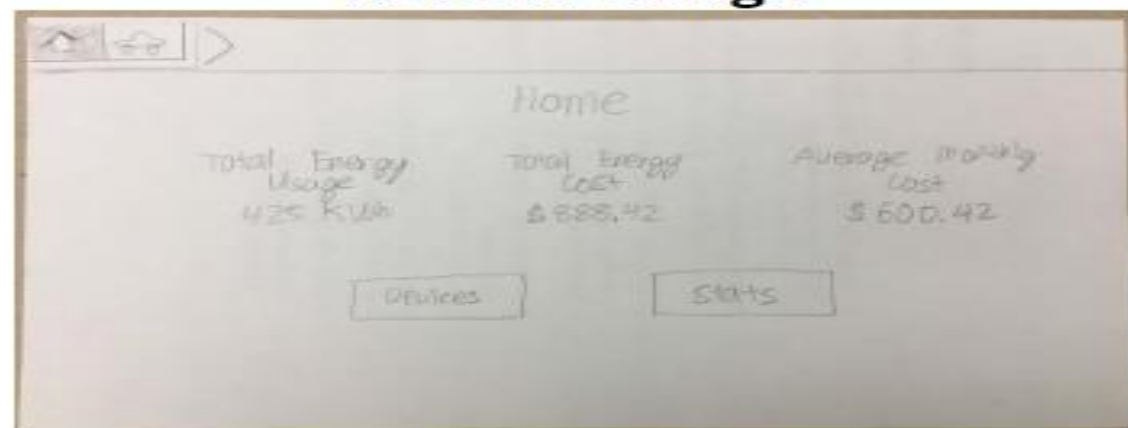
Revised Design



Original Design



Revised Design



Original Design

ENERGY MONITOR
Your Devices

• AC System	\$ 88.00	ON
• TV	\$ 20.00	ON
• Computers	\$ --.00	OFF
• Lights	\$ 8.42	ON
• Soc	\$ 22.45	ON

Back

Revised Design

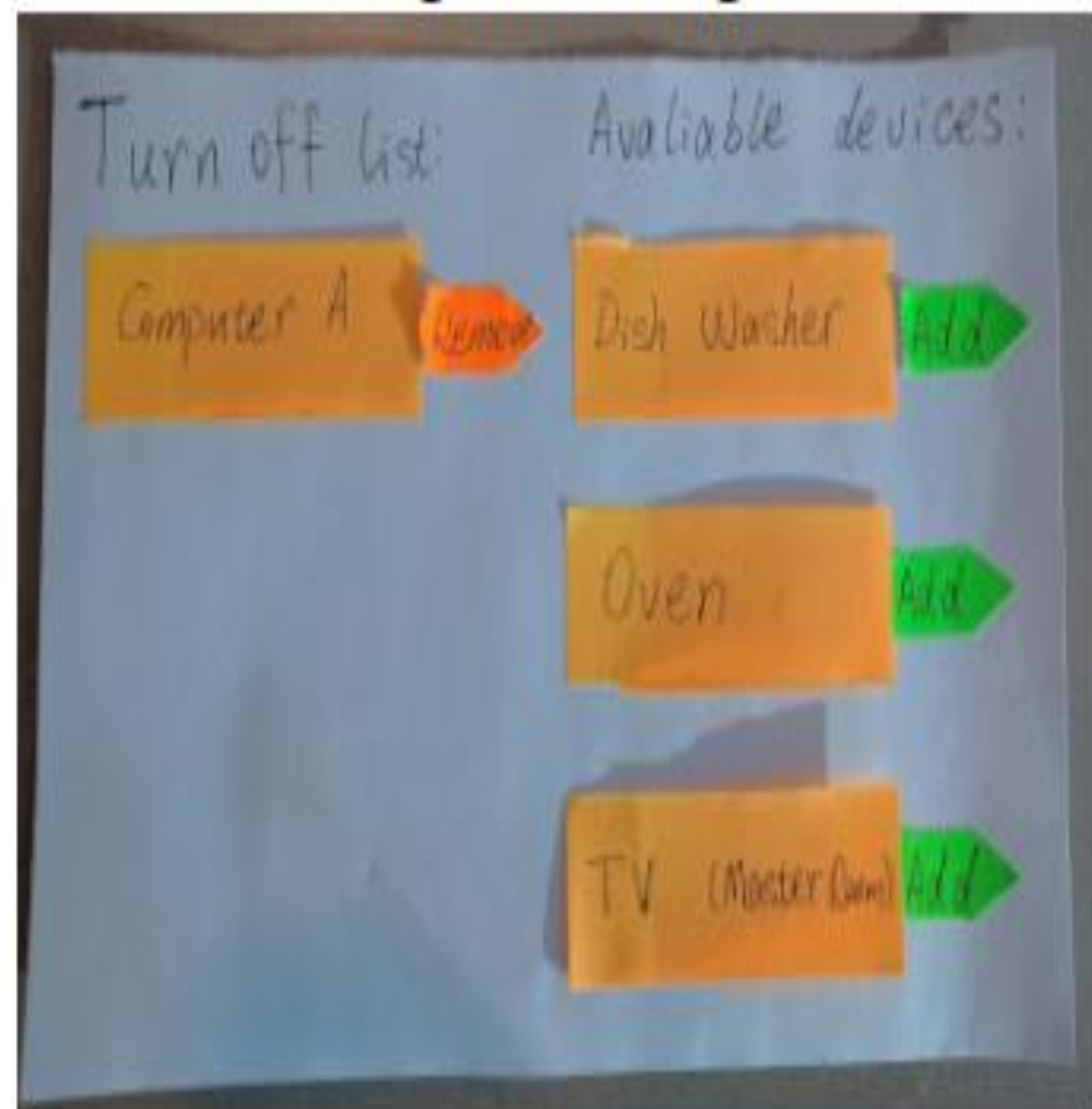
Home > Devices

Device List

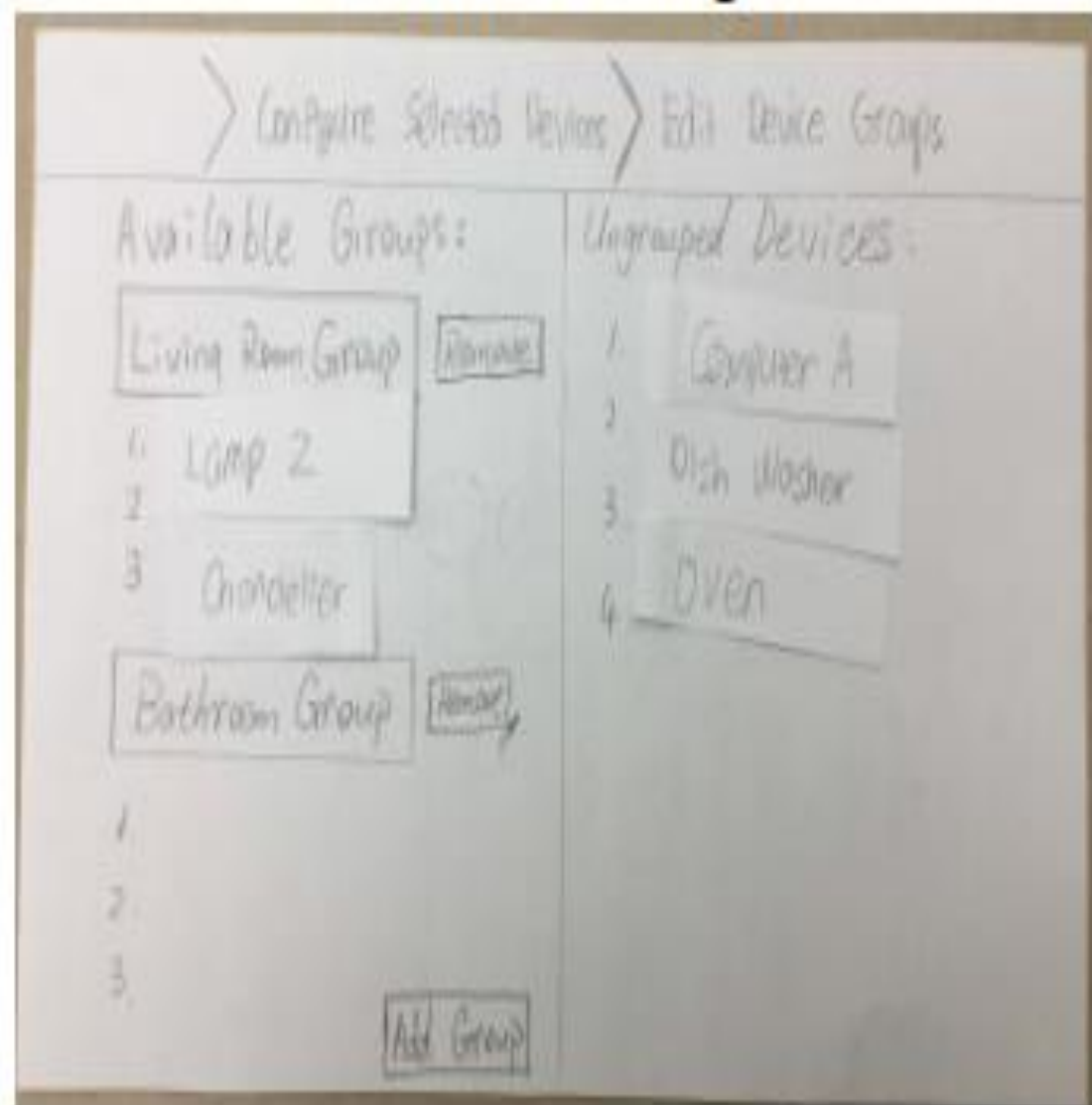
- AC system	\$ 88.00	ON
- TV	\$ 20.00	ON
- Computers	\$ --.00	OFF
- Lights	\$ 8.42	ON
- Soc	\$ 22.45	ON

⊕ Add Device

Original Design



Revised Design



Original Design

Monthly Gasoline Cost.

\$90.89

Driving Away

Refill History

Current Cost Analyze

Revised Design

Driving mode

Turn off selected devices ON 19

Configure selected devices

Monthly gas cost \$90.89 / month Avg v

Refill
History

OS
Settings

The two primary tasks

- Remind the user to turn off specific devices.
- Record driving data as well as household utility consumption.



Final Paper Prototype Overview

Home

Total Energy Usage	Total Energy Cost	Average Monthly Cost
425 kWh	\$888.42	\$600.42

Driving mode

Turn Off selected Devices

Configure selected Devices

Monthly gas cost: \$90.89 /month

Configure selected Devices

Turn Off List:	Available devices:
<input type="button" value="Remove"/>	<input type="button" value="Add"/>
<input type="button" value="Remove"/>	<input type="button" value="Add"/>
<input type="button" value="Remove"/>	<input type="button" value="Add"/>
<input type="button" value="Remove"/>	<input type="button" value="Add"/>

Devices

Device List		
- AC system	\$68.99	ON
- TV	\$20.00	ON
- Computers	\$---	off
- Lights	\$8.42	ON
- Gas	\$22.45	ON

Refueling History

Trip Date	Gallons	Total Cost	Miles	Location
Oct 12 th	16 gal	\$46.16	742mi	300 S, 400E.
Oct 20 th	13 gal	\$39.45	331 mi	200 W, 100 N.
Oct 28 th	11 gal	\$31.33	284mi	100 N, 800 E.
Oct 30 th	7 gal	\$20.49	110 mi	1000S, 700 E.

Cost Summary

Summary:
 Current Month: October
 Total Gas Usage: 20 gal
 Total Gas Cost: \$73

Statistics

Annual Overview

Current Month CO2

Total: \$28.49

Finished Refueling?

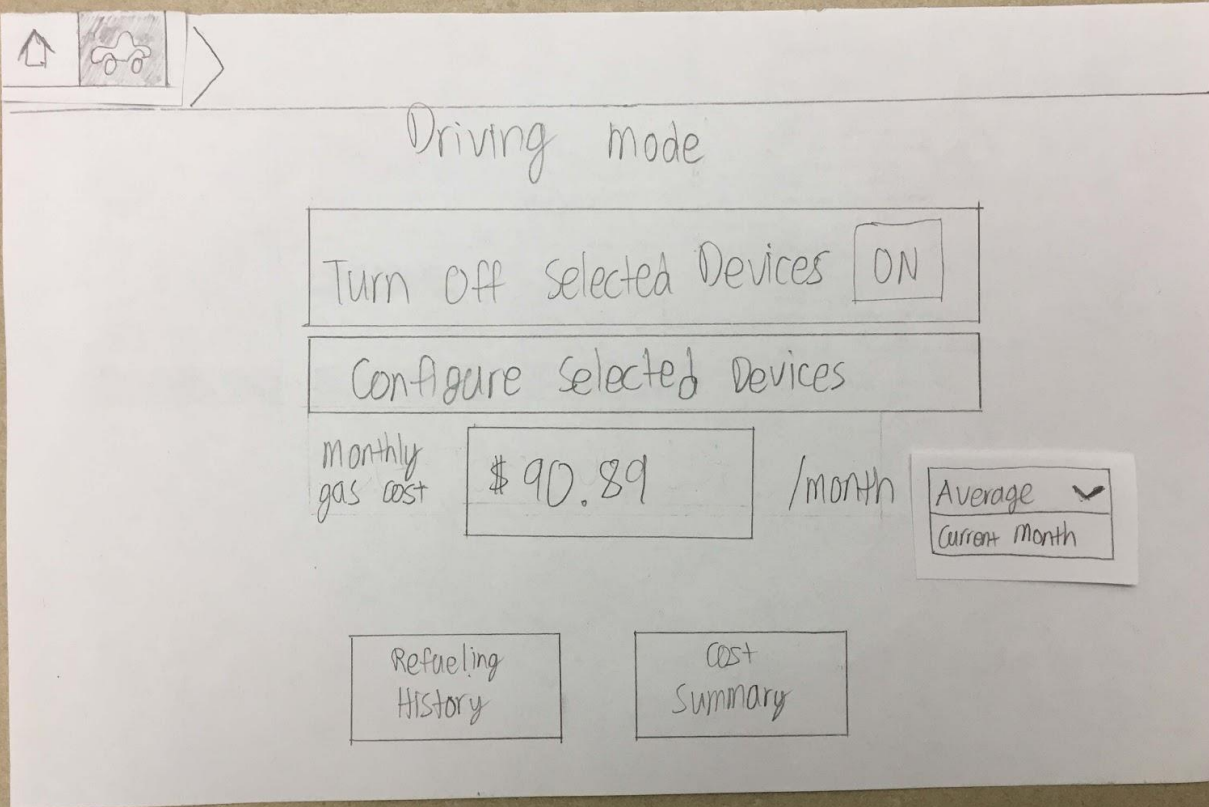
miles traveled: 300 mi
 Gallons filled: 14 gal
 Total cost:

- Refrigerator
- Dish Washer
- TV (Master Room)
- Computer A
- Lamp 2
- Lamp 1
- Oven

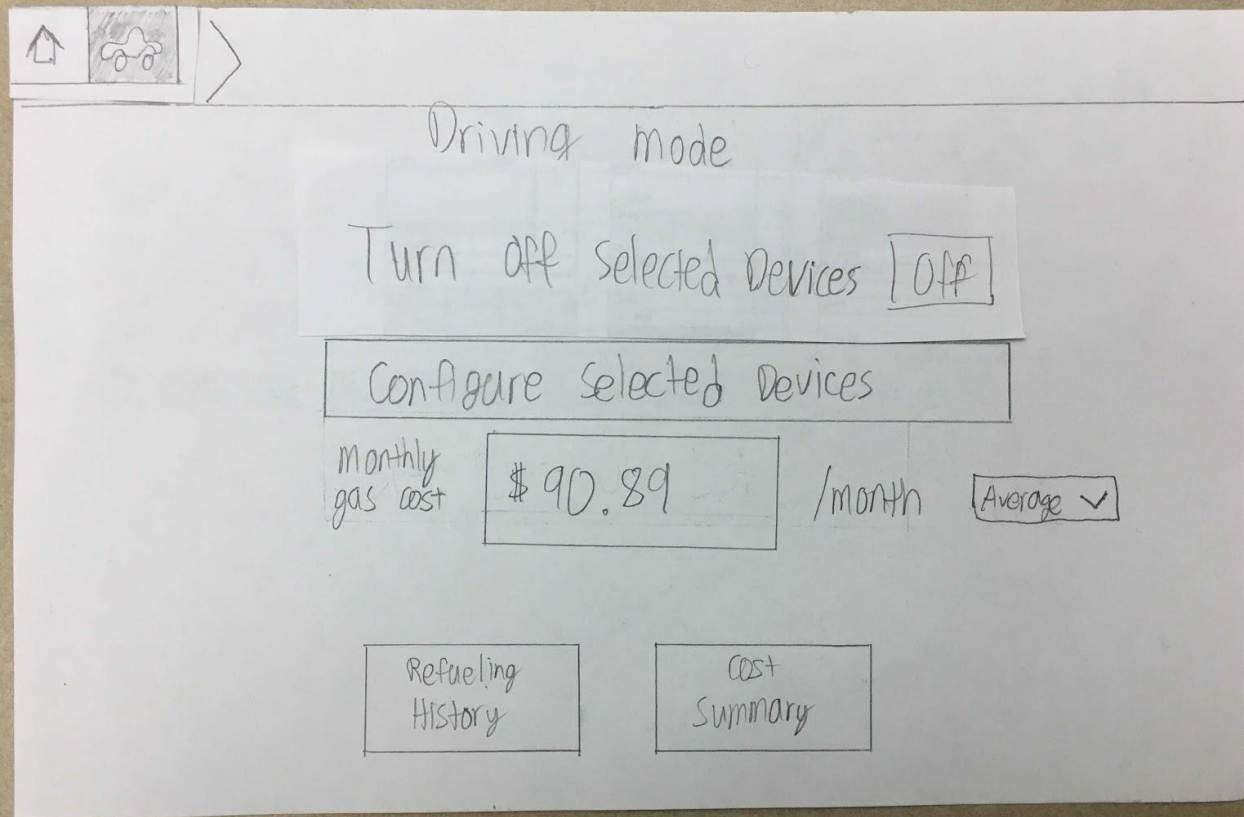
Turn Off selected Devices

\$70.69

Average



Turn On/Off devices



Task 1: Reminders to save energy

Task 1: Reminders to save energy

> Configure selected Devices. Undo

Turn Off List:		Available devices:	
Computer A	Remove	Add	Lamp 2
TV (master Room)	Remove	Add	
Dish Washer	Remove	Add	
Lamp 1	Remove	Add	

> Configure selected Devices. Undo

Turn Off List:		Available devices:	
Computer A	Remove	Add	Lamp 1
TV (master Room)	Remove	Add	Lamp 2
Dish Washer	Remove	Add	
	Remove	Add	

Add/Remove devices

Group the devices

> Configure Selected Devices > Edit Device Groups.

Available Groups:

Living Room Group

1. Lamp 2

2.

3. Chandelier

Bathroom Group

1.

2.

3.

Ungrouped Devices:

1. Computer A

2.

3. Dish Washer

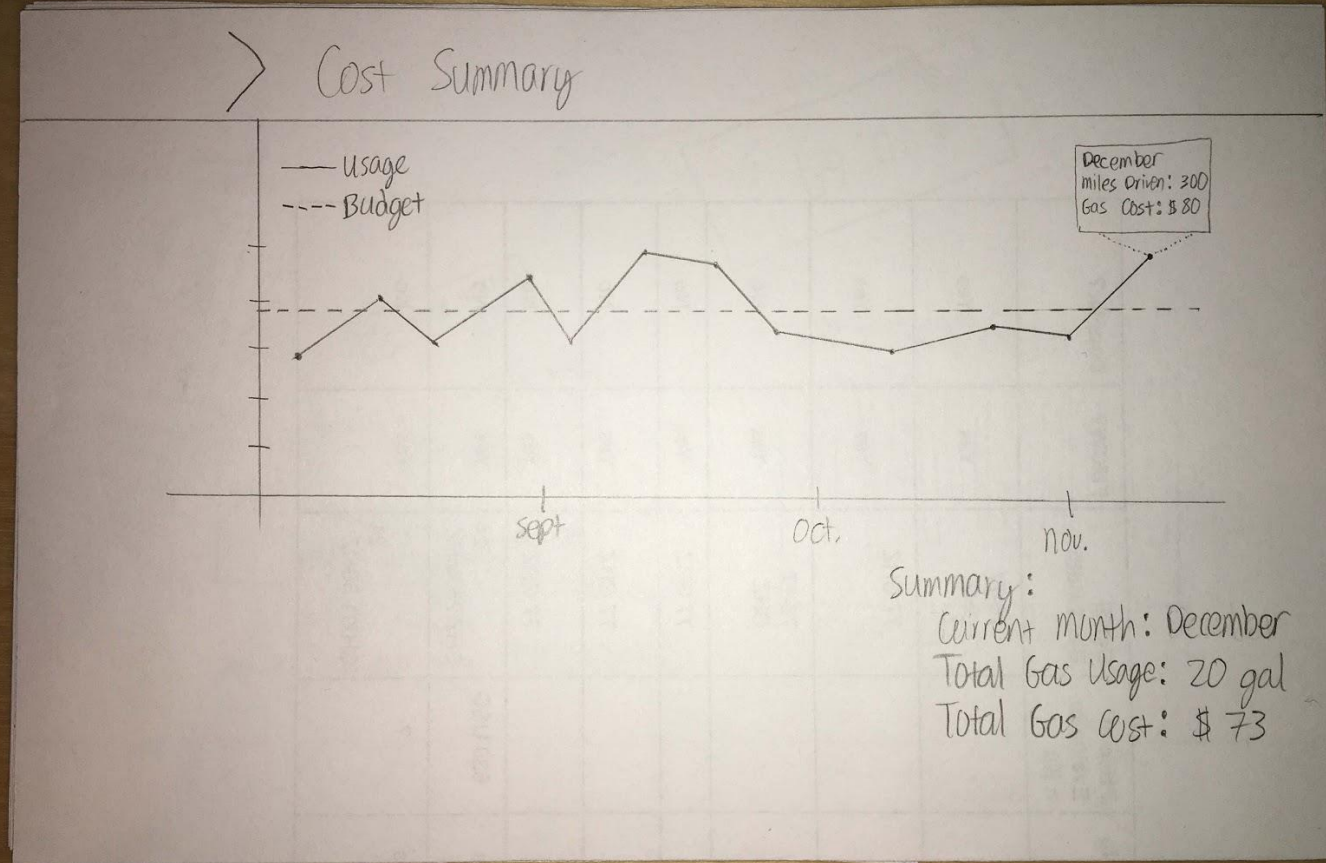
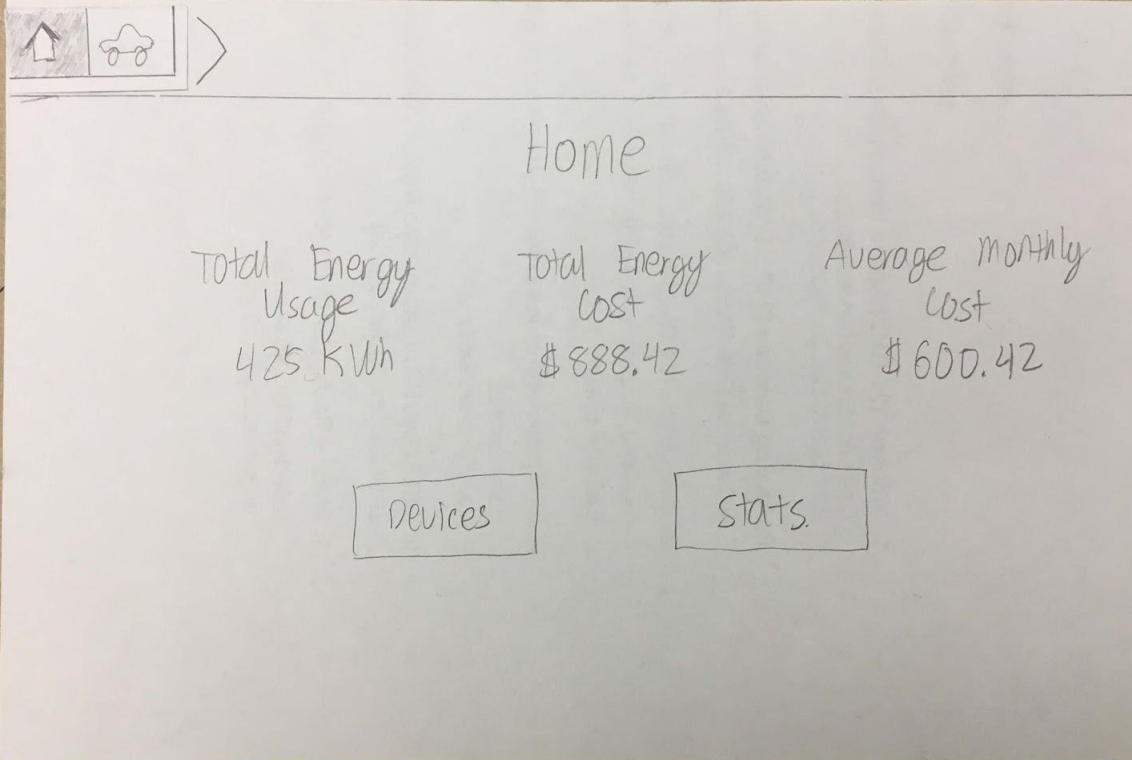
4.

Oven

Task 1: Reminders to save energy

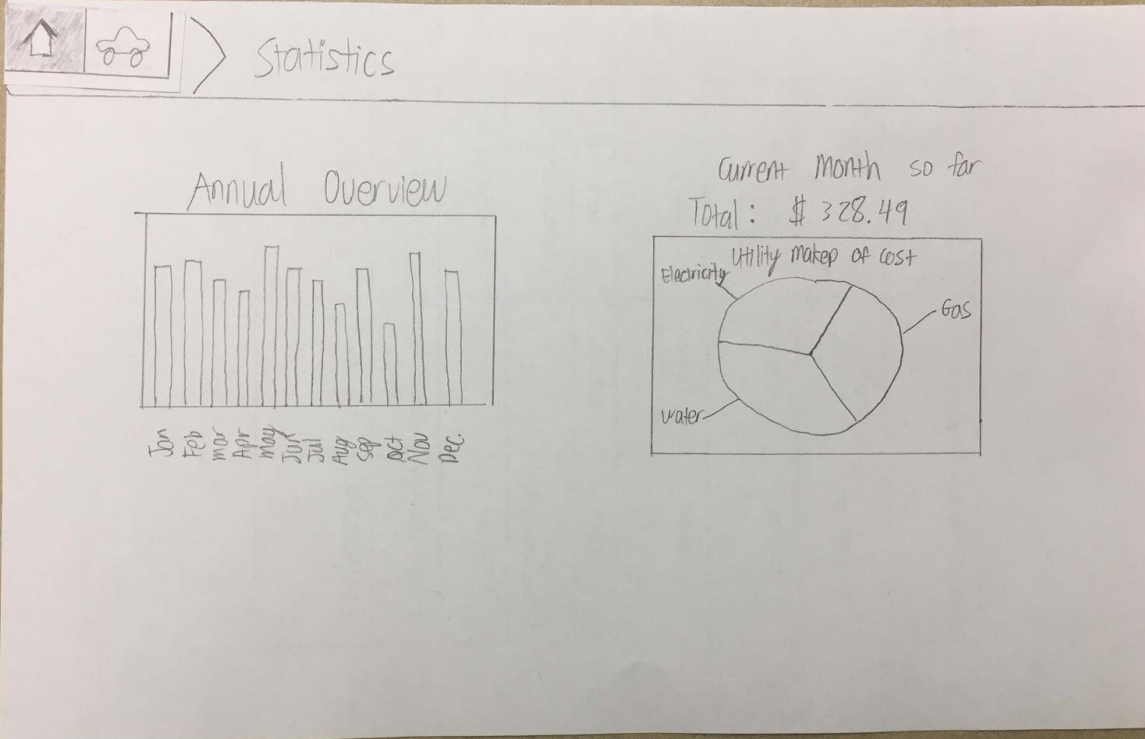
Task 2: Recording Data

In Home mode, collects data about energy usage and costs



In Drive mode, there is a "Cost Summary" which analyzes the gas usage and cost

Task 2: Recording Data



Home Car > Devices

Device List

- AC system	\$ 68.99	ON
- TV	\$ 20.00	ON
- Computers	\$ ---	off
- Lights	\$ 8.42	ON
- Gas	\$ 32.45	ON

⊕ Add Device

Shows Devices and analyzes the overall statistics

> Refueling History

Trip Date	Gallons	Total Cost	Miles	Location
Oct 12 th	16 gal	\$46.16	342mi	300 S, 400E.
Oct 20 th	13 gal	\$39.45	331mi	200 W, 100 N.
Oct 28 th	11 gal	\$31.33	284mi	100 N, 800 E.
Oct 30 th	7 gal	\$20.49	110 mi	1000s, 700 E.

Task 2: Recording Data

> Refueling History

Trip Date	Gallons	Total Cost	Miles	Location
Oct 12 th	16 gal	\$46.16	342mi	300 S, 400E.
Oct 20 th		\$39.45	331mi	200 W, 100 N.
Oct 28 th				100 N, 800 E.
Oct 30 th				1000s, 700 E.

Finished Refueling?

miles traveled: 300 mi

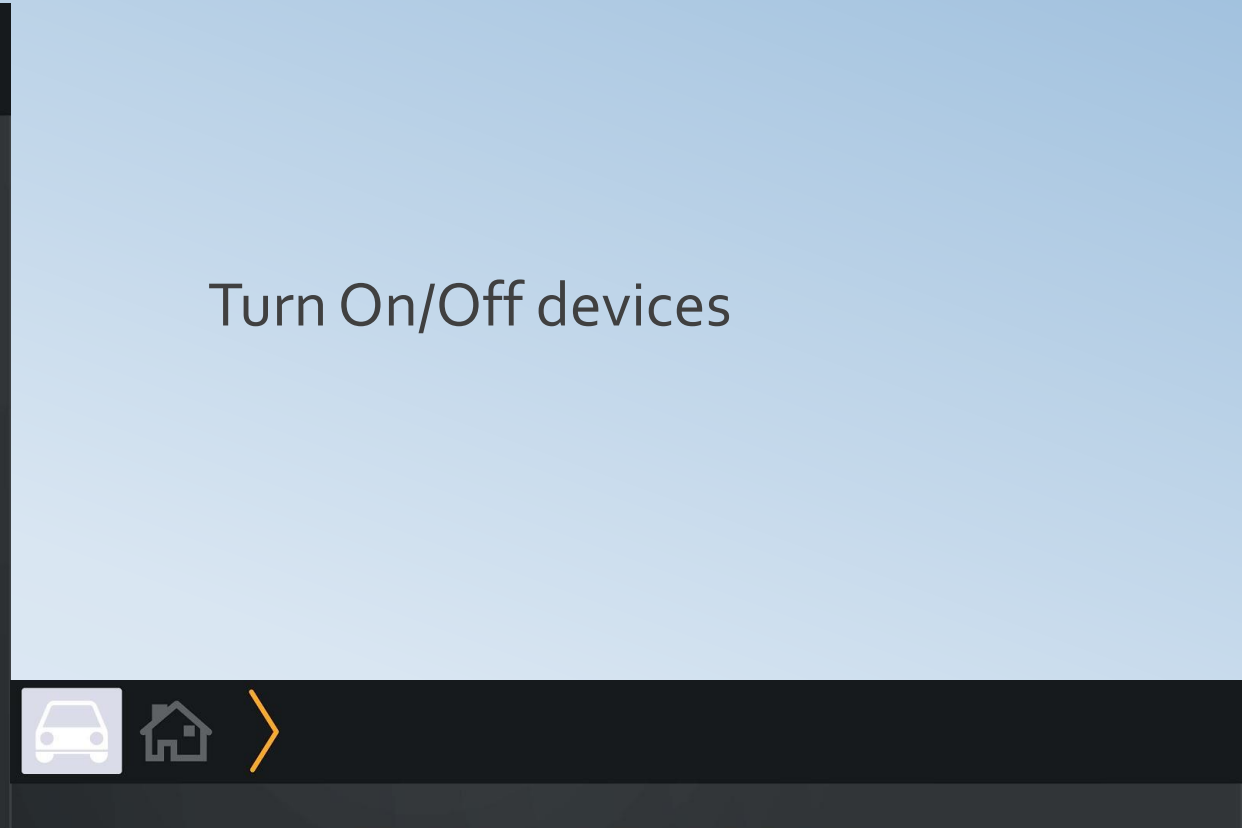
Gallons filled: 14 gal

Total cost:

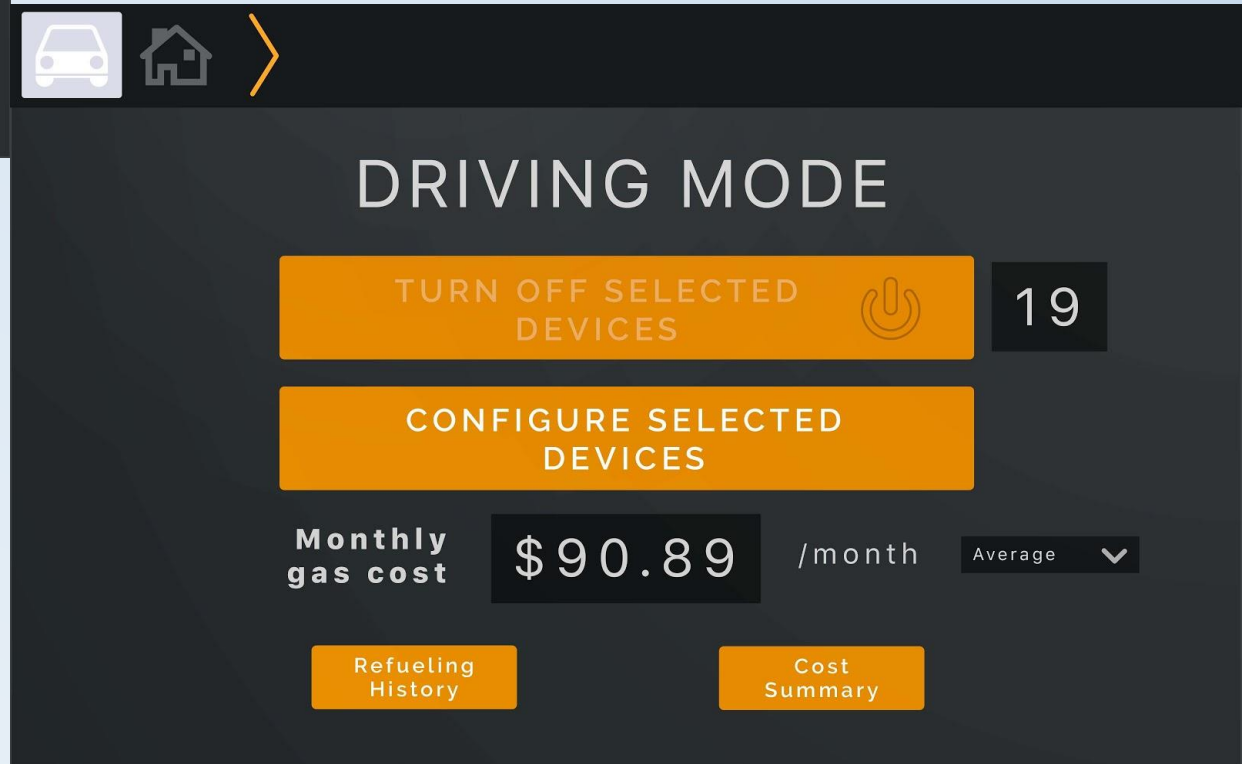
In Drive mode, record the data of refueling and cost



Digital Mockup


















Task 1: Reminders to Save Energy
















> CONFIGURE DEVICES

Turn off List	Available Devices
Bedroom Computer 	 Living Room Light
Bathroom Group 	 Refrigerator
Television 	 Heater
Washing Machine 	 Air Conditioning
Dish Washer 	 Porch Lamp

Edit Groups




> CONFIGURE DEVICES > EDIT GROUPS

Groups	Ungrouped Devices
Bedroom Computer 	 Living Room Light
Bathroom Group 	 Refrigerator
Television 	 Heater
Washing Machine 	 Air Conditioning
Dish Washer 	 Porch Lamp

Add Group


Task 1: Reminders to Save Energy

Add/Remove/Group up the devices



> CONFIGURE DEVICES

Turn off List	Available Devices
Bedroom Computer 	 Living Room Light
Bathroom Group 	 Refrigerator
Television 	 Heater
Washing Machine 	 Air Conditioning
Dish Washer 	 Porch Lamp

Edit Groups




HOME MODE

Total Energy Usage

425 kWh

Total Energy Cost

\$888.42

Average Monthly Cost

\$600.42

Devices

Stats

In Home mode, collects data about energy usage and costs

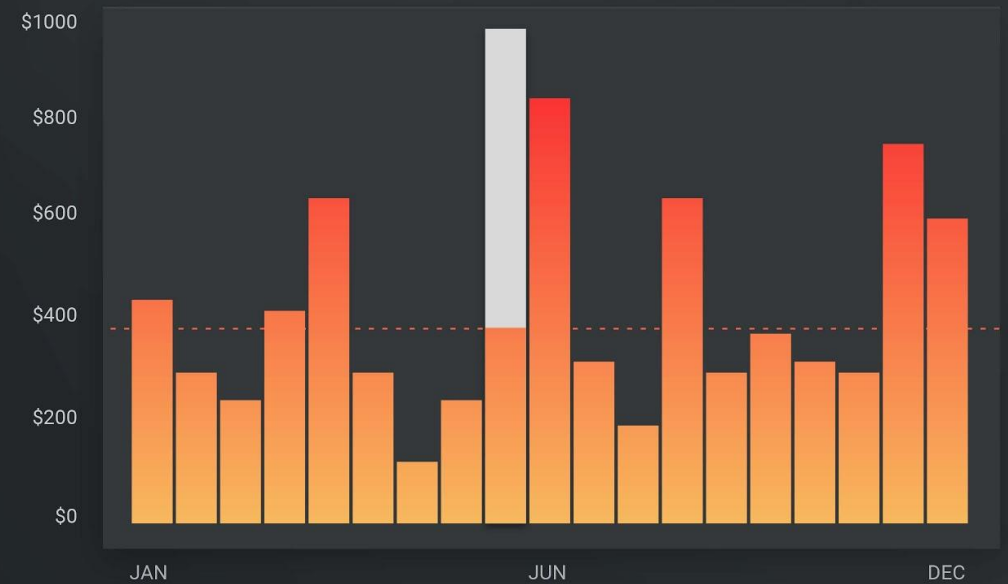


COST SUMMARY

Current Month: December

Total Gas: 20 gal

Total Cost: \$73.24



In Drive mode, there is a "Cost Summary" which analyzes the gas usage and cost

Task 2: Recording Data

DEVICE LIST

name	cost	status
Air Conditioning	\$68.99	On
Television	\$ - - - -	Off
Computers	\$8.42	On
Gas	\$32.45	On

+ Add Device

Shows Devices and analyzes the overall statistics

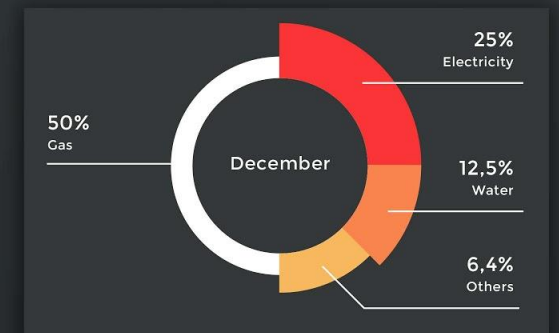
Task 2: Recording Data



Annual Overview



Current Month

Total: \$328.49





➤ REFUELING HISTORY

trip date ▼	gallons	total cost	miles	location
2016/10/12	16.205 gal	\$46.16	342 mi	300 S. 400 E.
2016/10/20	17.300 gal	\$39.45	331 mi	200 W. 100 N.
2016/10/28	10.846 gal	\$31.33	284 mi	100 N. 800 E.
2016/10/30	14.838 gal	\$20.49	110 mi	1000 S. 700 E.

In Drive mode, record the data of refueling and cost



➤ REFUELING HISTORY

trip date	gallons	total cost	miles ▼	location
2016/10/12	16.205 gal	\$46.16	110 mi	300 S. 400 E.
2016/10/20				200 W. 100 N.
2016/10/28				100 N. 800 E.
2016/10/30				1000 S. 700 E.

Finished Refueling?

Miles Traveled:

Gallons Filled:

Total Cost:

Task 2: Recording Data

Summary

- Brain storm is the best way to generate ideas.
- As the program goes further, we can always get ideas to improve it.
- User feedback is really important for the program!
- Whatever improvement you made, don't hope it can fit everyone's need



Thank you!

Any questions?

