

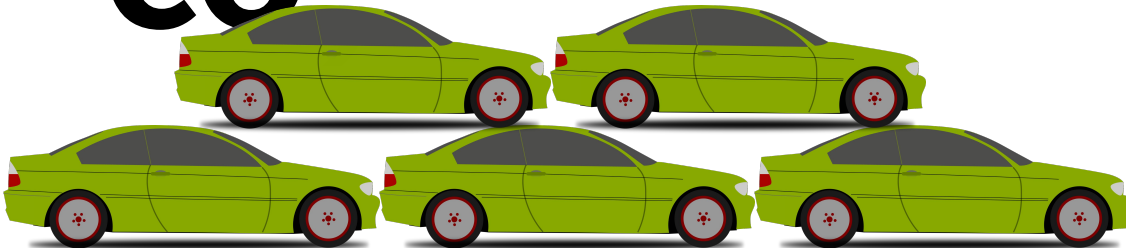
Gr n Light

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Green Light API provides the access to data needed to integrate traffic lights, which minimizes idling, abrupt accelerations, and congestion thus reducing carbon emissions

• simple solution to a huge problem •

30 million tons of CO



5 million cars worth of CO₂ per year

High Idling Time

Road Conditions

Weather Conditions

Abrupt Accelerations



**Latitude, Longitude
Coordinate of Intersection**



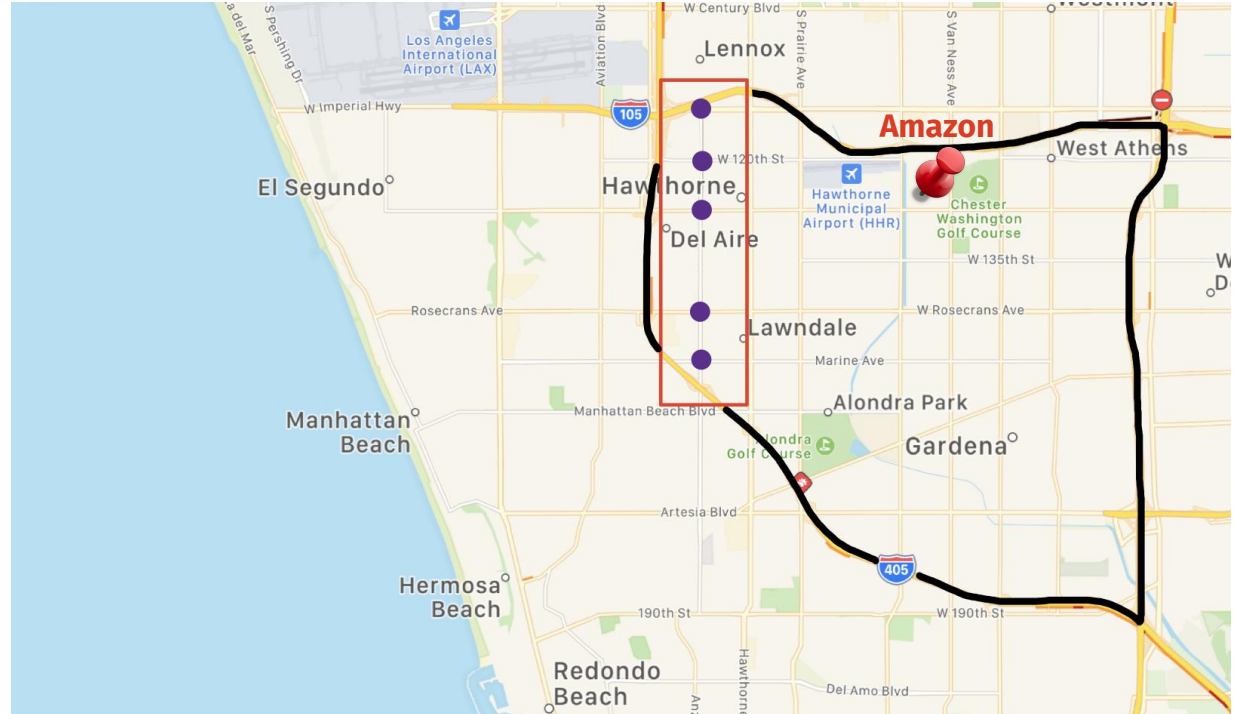
**Number, Type of
Vehicle**



**Road: Pavement,
Friction**

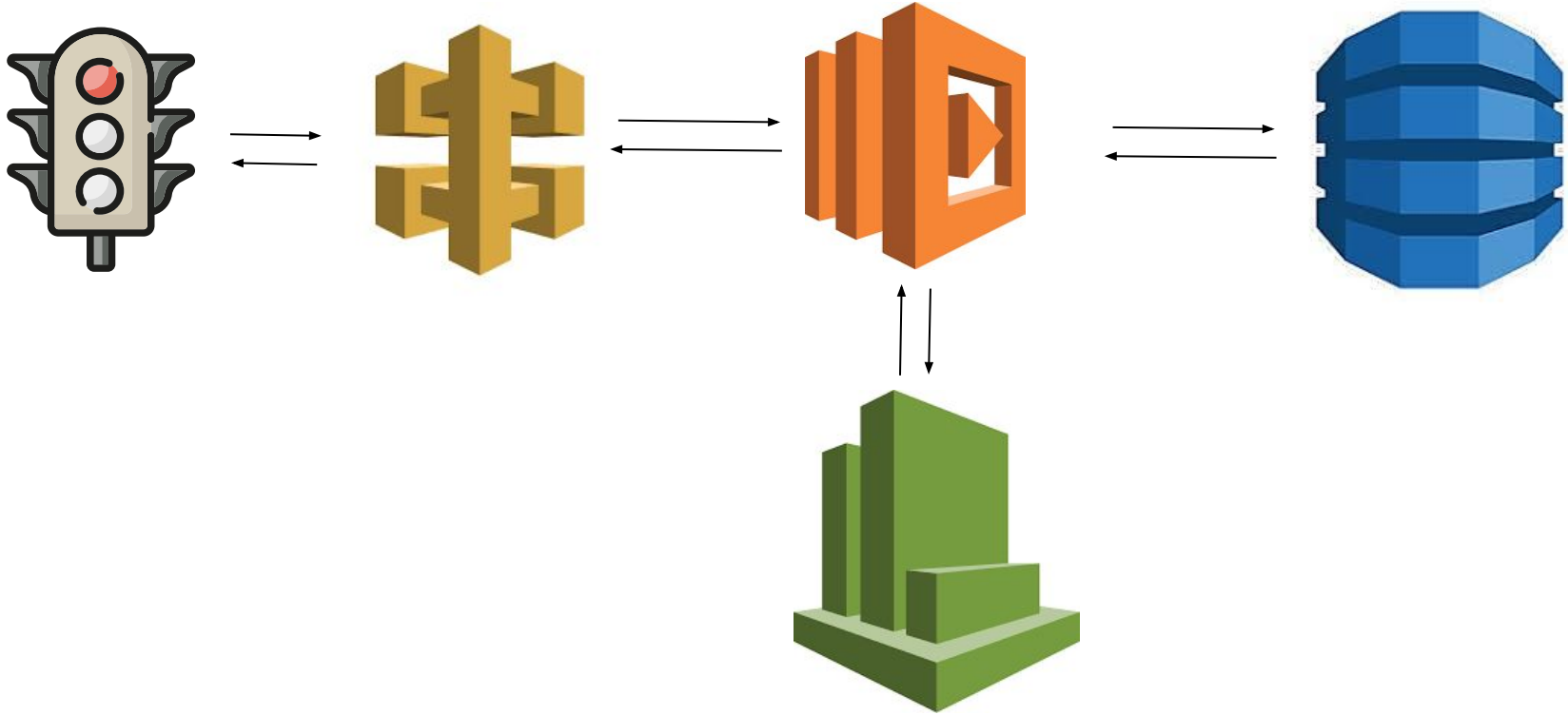


**Wait time of
vehicles**



Green Light

Architecture Diagrams



Single Get

The screenshot shows a web browser interface with a GET request to `https://lmtvuav8pf.execute-api.us-west-2.amazonaws.com/trafficL`. The response is displayed in the 'Body' tab, formatted as JSON. The JSON object contains the following fields:

```
{
  "id": "1",
  "light": "270",
  "cars": 99,
  "caremission": "Bad, High Congestion",
  "roadConditions": "No Rain , No Paved",
  "smoothness": "Not Smooth",
  "temp": "90",
  "tempRating": "High: caution time low",
  "time": "40",
  "timeRate": "Bad"
}
```

Multiple Gets

The screenshot shows a web browser interface with a GET request to `https://lmtvuav8pf.execute-api.us-west-2.amazonaws.com/trafficL`. The response is displayed in the 'Body' tab, formatted as JSON. The JSON object contains the following fields:

```
{
  "id": "#2 33°55'25.2'N 118°21'40.7'W",
  "light": "90",
  "cars": 99,
  "caremission": "Ok, Medium Congestion",
  "roadConditions": "No Rain , Paved",
  "smoothness": "Not Smooth",
  "temp": "15",
  "tempRating": "Low: caution time high",
  "time": "45",
  "timeRate": "Bad"
},
{
  "id": "#4 33°55'25.2'N 118°21'40.7'W",
  "light": "270",
  "cars": 99,
  "caremission": "Bad, High Congestion",
  "roadConditions": "No Rain , No Paved",
  "smoothness": "Not Smooth",
  "temp": "90",
  "tempRating": "High: caution time low",
  "time": "40",
  "timeRate": "Bad"
},
{
  "id": "#2 233°55'51.4'N 118°21'40.8'W",
  "light": "180",
  "cars": 99,
  "caremission": "Good, Low Congestion",
  "roadConditions": "Rain , Not Paved",
  "smoothness": "Smooth",
  "temp": "35",
  "tempRating": "Low: caution time high",
  "time": "40",
  "timeRate": "Bad"
}
```

Green Light

Before Delete

Services ▾ Search for services, features, marketplace products, and docs [Alt+S]

> ▾ trafficLightOne

Scan Query

Table or index
trafficLightOne

► Filters

Run Reset

✓ Completed Read capacity units consumed: 0.5

Items returned (4)

<input type="checkbox"/>	Id ▾	allCars
<input type="checkbox"/>	2	{ "Cars": { "S": "0" }, "Trucks": { "S": "1" }, "Buses": { "S": "0" }, "Motorcycles": { "S": "0" }
<input type="checkbox"/>	1	{ "Cars": { "S": "3" }, "Trucks": { "S": "1" }, "Buses": { "S": "0" }, "Motorcycles": { "S": "0" }
<input type="checkbox"/>	#1: 33°55'5...	{ "Cars": { "S": "1" }, "Trucks": { "S": "0" }, "Buses": { "S": "0" }, "Motorcycles": { "S": "0" }
<input type="checkbox"/>	#2: 33°55'5	{ "Cars": { "S": "1" }, "Trucks": { "S": "0" }, "Buses": { "S": "0" }, "Motorcycles": { "S": "0" }

English (US) ▾ © 2008 - 2021, Amazon

https://lmtvuav8pf.execute-api.us-west-2.amazonaws.com/trafficLightOne Save ▾

DELETE ▾ → https://lmtvuav8pf.execute-api.us-west-2.amazonaws.com/trafficLightOne Send

Params Auth Headers (7) Body ● Pre-req. Tests Settings

raw ▾ JSON ▾

```
1 {
2   "id": "2",
3   "light": "0",
4   "name": "T",
5   "condition": "Rain, Not Paved",
6   "temperature": "67",
7   "time": "20"
8 }
```

Body ▾ 500 Internal Server Error 1619 ms 221 B Save Resp

Pretty Raw Preview Visualize JSON ▾

```
1 {
2   "message": "Internal Server Error"
3 }
```

Green Light

After Delete

ScanQuery

Table or index
trafficLightOne

Filters

RunReset

Completed Read capacity units consumed: 0.5

Items returned (3)

<input type="checkbox"/>	Id	allCars
<input type="checkbox"/>	1	{ "Cars": { "S": "3" }, "Trucks": { "S": "1" }, "Buses": { "S": "0" }, "Motorcycle
<input type="checkbox"/>	#1: 33°55'5...	{ "Cars": { "S": "1" }, "Trucks": { "S": "0" }, "Buses": { "S": "0" }, "Motorcycle
<input type="checkbox"/>	#2: 33°55'5...	{ "Cars": { "S": "1" }, "Trucks": { "S": "0" }, "Buses": { "S": "0" }, "Motorcycle

OverviewDEL https://lmtvuav8pf...No Environment

https://lmtvuav8pf.execute-api.us-west-2.amazonaws.com/trafficLightOn... Save

DELETE → https://lmtvuav8pf.execute-api.us-west-2.amazonaws.com/trafficLight... Send

ParamsAuthHeaders (7)BodyPre-req. Tests Settings

rawJSON

```
1 {
2   "id": "2",
3   "light": "0",
4   "name": "T",
5   "condition": "Rain , Not Paved",
6   "temperature": "67",
7   "time": "20"
8 }
```

Body500 Internal Server Error 1521 ms 221 B Save Response

PrettyRawPreviewVisualizeJSON

```
1 {
2   "message": "Internal Server Error"
```

Green Light

AWS Lambda Conditionals Code

```
case 'POST':
  let requestBody = JSON.parse(event.body);
  let id = requestBody.id;
  let name = requestBody.name;
  let temperature = requestBody.temperature;
  let condition = requestBody.condition;
  let time = requestBody.time;
  let light = requestBody.light;
  let smoothness;
  let tempRating;
  let timeRating;
  let emissionnumber;
  let emissionstatus;
  counter++;

  emissionnumber = (c*1+m*2+t*3+b*4);
  if (emissionnumber >= 45) {
    emissionstatus = "Bad, High Congestion";
  }
  if (emissionnumber>20 && emissionnumber<45) {
    emissionstatus = "Ok, Medium Congestion";
  }
  if (emissionnumber<=20) {
    emissionstatus = "Good, Low Congestion";
  }

  if (temp != id) {
    c = 0;
    t = 0;
    b = 0;
    m = 0;
  }
}
```

AWS Lambda Conditionals Code

```
temp = id;
if (time <= 12) {
    timeRating = "Good";
}
if (time > 12 && time < 20) {
    timeRating = "Ok";
}
if (time >= 20) {
    timeRating = "Bad";
}
if (temperature >= 80 ){
    tempRating = "High: caution time low";
}
if (temperature >= 50 && temperature <= 80 ){
    tempRating = "Medium: caution time medium";
}
if (temperature < 50 ){
    tempRating = "Low: caution time high";
}

if (condition.substring(0, 4) == "Rain" && condition.substring(7) == "Paved") {
    smoothness = "Very smooth";
}
if (condition.substring(0, 4) == "Rain" && condition.substring(7) != "Paved") {
    smoothness = "Smooth";
}
if (condition.substring(0, 4) != "Rain" && condition.substring(10) == "Paved") {
    smoothness = "Smooth";
}
if (condition.substring(0, 4) != "Rain" && condition.substring(7) != "Paved") {
    smoothness = "Not Smooth";
}

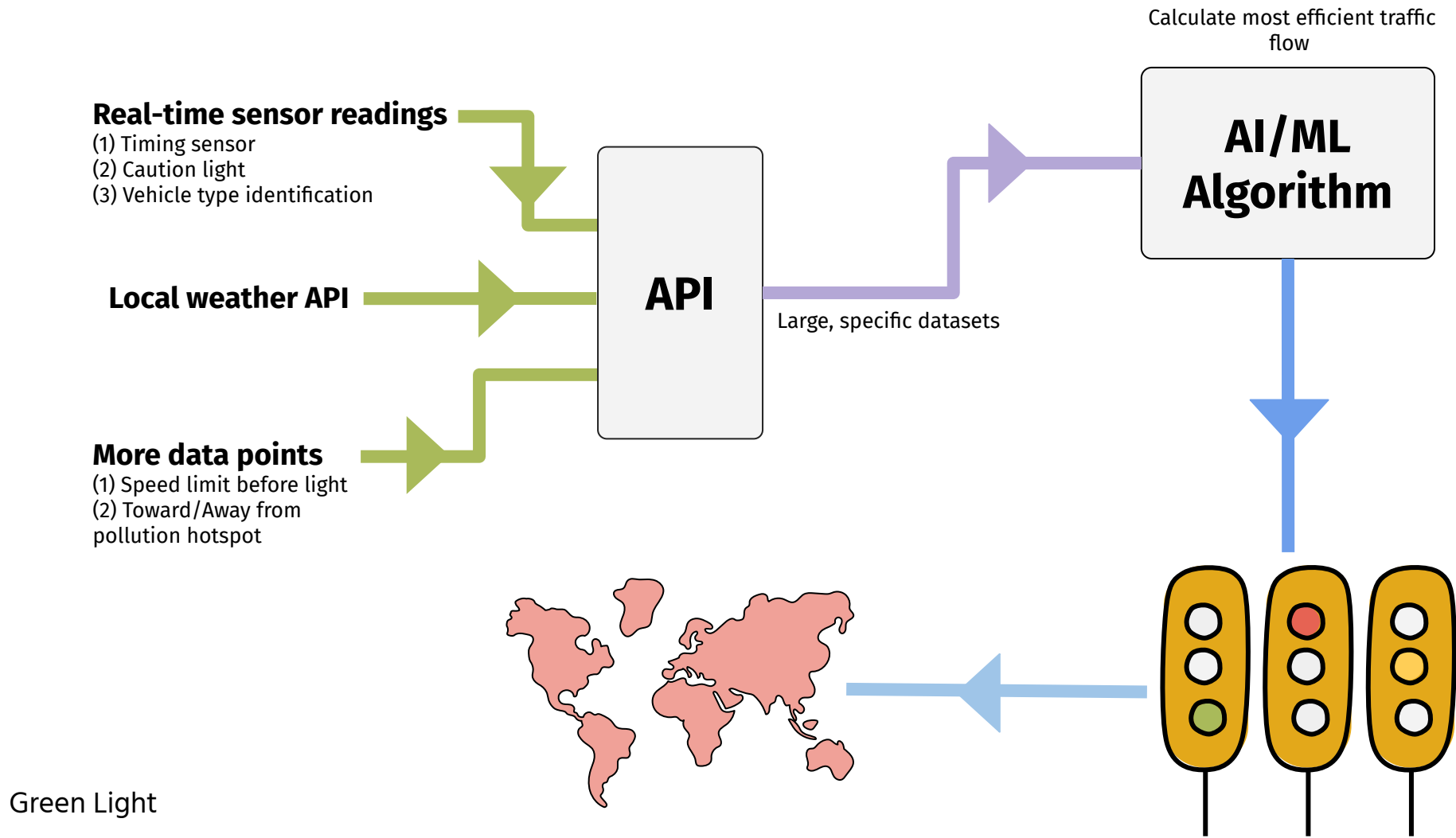
if (name == "C") {
    c++;
}
if (name == "T") {
    t++;
}
if (name == "B") {
    b++;
}
if (name == "M") {
    m++;
}
```

JSON Input File

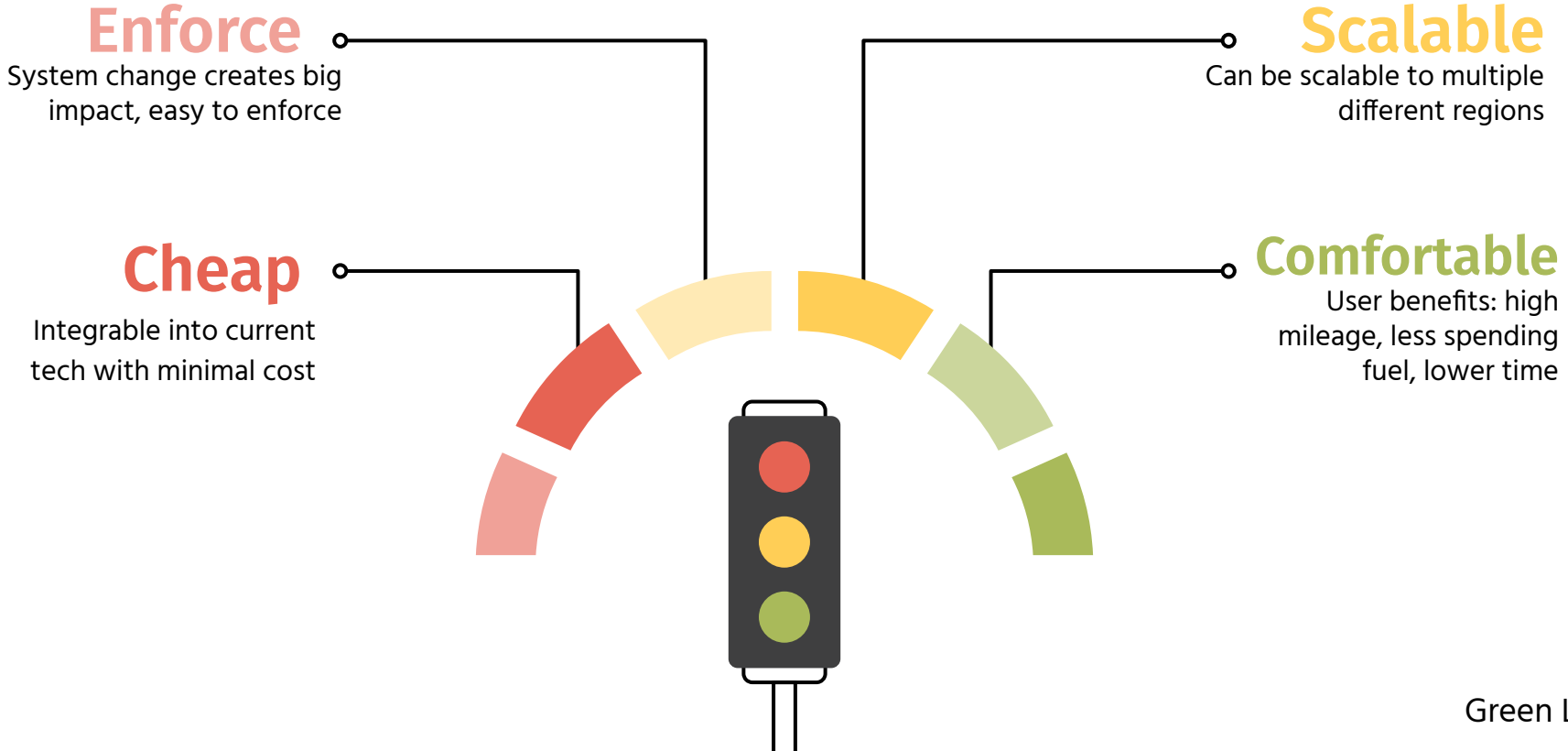
```
[
  {
    "id": "#1: 33°55' 51.4' N 118°21' 40.8' W",
    "light": "0°",
    "name": "C",
    "condition": "Rain , Not Paved",
    "temperature": "67",
    "time": "20"
  }
]
```

DynamoDB Table

<input type="checkbox"/>	Id	allCars	caremiss...	LightAngle	roadCon...	smoothen...	tempera...	tempRat...	timeRating	timeWai
<input type="checkbox"/>	#2 33°55'2...	{ "Cars": { "S": "12" }, "Trucks": { "S": "0" }, "B...	Ok, Mediu...	90	No Rain , Pa...	Not Smooth	15	Low: cautio...	Bad	45
<input type="checkbox"/>	2	{ "Cars": { "S": "0" }, "Trucks": { "S": "1" }, "Bus...	Good, Low ...	270	No Rain , N...	Not Smooth	90	High: cauti...	Bad	40
<input type="checkbox"/>	#4 33°55'2...	{ "Cars": { "S": "17" }, "Trucks": { "S": "4" }, "B...	Bad, High C...	270	No Rain , N...	Not Smooth	90	High: cauti...	Bad	40
<input type="checkbox"/>	#2 233°55'...	{ "Cars": { "S": "0" }, "Trucks": { "S": "5" }, "Bus...	Good, Low ...	180°	Rain , Not P...	Smooth	35	Low: cautio...	Bad	21
<input type="checkbox"/>	1	{ "Cars": { "S": "0" }, "Trucks": { "S": "1" }, "Bus...	Bad, High C...	270	No Rain , N...	Not Smooth	90	High: cauti...	Bad	40
<input type="checkbox"/>	#1 33°55'2...	{ "Cars": { "S": "18" }, "Trucks": { "S": "7" }, "B...	Bad, High C...	0	Rain , Paved	Very smooth	90	High: cauti...	Bad	45
<input type="checkbox"/>	#1 233°55'...	{ "Cars": { "S": "1" }, "Trucks": { "S": "3" }, "Bus...	Good, Low ...	0°	No Rain , Pa...	Not Smooth	35	Low: cautio...	Ok	15
<input type="checkbox"/>	#3 233°55'...	{ "Cars": { "S": "0" }, "Trucks": { "S": "2" }, "Bus...	Good, Low ...	90	No Rain , Pa...	Not Smooth	35	Low: cautio...	Good	10
<input type="checkbox"/>	#3 33°55'2...	{ "Cars": { "S": "5" }, "Trucks": { "S": "0" }, "Bus...	Good, Low ...	180	No Rain , N...	Not Smooth	50	Medium: ca...	Good	10
<input type="checkbox"/>	#4 233°55'...	{ "Cars": { "S": "5" }, "Trucks": { "S": "2" }, "Bus...	Ok, Mediu...	270	Rain , Paved	Very smooth	70	Medium: ca...	Good	10



Pillars of Green Light



Thank You

