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# IBM AICTE PROJECT

## SMART HOME ENERGY ADVISOR AGENT

**Presented By:-**

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**College Name & Department : Tirumala Engineering College**

# OUTLINE

- Problem Statement
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- Technology used
- Wow factor
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- API Reference
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- Conclusion
- Git-hub Link
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# PROBLEM STATEMENT

A Smart Home Energy Advisor Agent acts like your personal electricity manager. It takes information from your smart meter and appliances, analyzes power usage, and gives you tips to save energy. The agent can answer questions like "Why is my bill so high this month?" or "What time should I run the washing machine to save money?". It uses AI to understand consumption patterns and provide simple recommendations.

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# PROPOSED SOLUTION

The Smart Home Energy Advisor Agent is a software-only solution built on IBM Cloud that uses simulated energy data to analyze home electricity usage. It applies AI models in Watson Studio to detect patterns, predict high bills, and suggest energy-saving tips. Users can ask questions through a chatbot powered by IBM Watson Assistant.

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# TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

IBM Granite model

# IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model

# WOW FACTORS

- **Conversational Interface**  
Users can talk to the agent naturally through IBM Watson Assistant, making energy management easy and interactive.
- **Real-Time Recommendations**  
Suggests optimal times to run appliances based on simulated tariff data and usage patterns.
- **Custom Web Dashboard**  
A clean, user-friendly dashboard shows real-time usage trends, estimated bills, and personalized energy-saving tips.
- **Cloud-Native & Scalable**  
Built entirely on IBM Cloud, making it scalable, secure, and accessible from anywhere.
- **Smart Billing Insights**  
Explains why the electricity bill is high in plain language a feature users truly appreciate.

## END USERS

- **Home owners & Renters**  
Want to monitor and reduce electricity bills through smart, personalized insights.
- **Students & Tech Enthusiasts**  
Interested in learning how AI and smart energy systems work through simulation.
- **Utility Customers**  
Looking to understand their energy usage better and adopt cost-saving habits.
- **Energy Efficiency Consultants**  
Can use the tool to demonstrate energy-saving strategies to clients.
- **Educational Institutions**  
Useful for teaching energy management, AI applications, and cloud computing.
- **Green Living Advocates**  
Individuals focused on reducing carbon footprint and promoting sustainable living.



# API REFERENCE

IBM watsonx

Upgrade



[Deployment spaces](#) / [AURA\(Automated Utility Resource Advisor\)](#) / [AURA\(Automated Utility Resource Advisor\)](#) /

## AURA(Automated Utility Resource Advisor) ✓ Deployed Online

API reference

Test

Preview

### Endpoints for inferencing ⓘ

Private endpoint

<https://us-south.ml.cloud.ibm.com/ml/v4/deployments/b75f1b9e-32ad-4927-b63e-173e72ca5>



<https://us-south.ml.cloud.ibm.com/ml/v4/deployments/b75f1b9e-32ad-4927-b63e-173e72ca5>



Public endpoint

<https://us-south.ml.cloud.ibm.com/ml/v4/deployments/b75f1b9e-32ad-4927-b63e-173e72ca5>



<https://us-south.ml.cloud.ibm.com/ml/v4/deployments/b75f1b9e-32ad-4927-b63e-173e72ca5>









Bearer <token> ⓘ

IAM


[Learn more](#) about the 2021-05-01 version query parameter

# RESULTS

[Upgrade](#)   Kapilavayi Keerthi Swetha ... Dallas KK

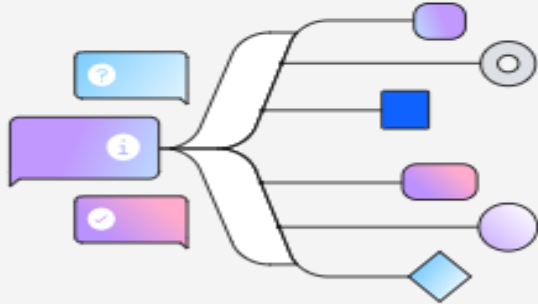
[Share feedback](#)   [New agent +](#) [Deploy](#)  



## Agent preview

 AURA(Automated Utility Resource Advisor) 06:06 PM

Welcome to AURA(Automated Utility Resource Advisor)

I'm AURA your advisor, here to help optimize your home's energy consumption smartly and effortlessly



# RESULTS

## Agent preview



You: 06:11 PM

How can I save on my power bill?



AURA(Automated Utility Resource Advisor) 06:11 PM

Hi, I am Smart Home Energy Advisor Agent. How can I help you?

There are several ways to save on your power bill through smart home technology and energy-efficient practices:

1. **Smart Thermostats:** Devices like Nest or Ecobee can learn your schedule and adjust the temperature to save energy when you're not home.
2. **Smart Lighting:** Switch to LED bulbs and use smart switches or smart bulbs that can be programmed to turn off when not in use or dimmed when natural light is sufficient.
3. **Energy Monitoring Systems:** Tools like Sense or Neurio provide real-time energy usage data, allowing you to identify which appliances are using the most power.

Type something...



# RESULTS

## Agent preview



You: 06:26 PM

What's the best time to use heavy appliances?



watsonx Agent 06:26 PM

The best time to use heavy appliances is during off-peak hours, which are typically from 9 PM to 4 PM, Monday through Friday. Using appliances during these hours can help reduce energy consumption and lower electricity bills. It's also a good idea to avoid using heavy appliances during peak hours, which are usually from 4 PM to 9 PM, when energy demand is high and less wind and solar power is available. Additionally, it's recommended to turn off electronic devices when not in use, especially during peak hours, to conserve energy.

► How did I get this answer?





Type something...





# RESULTS


## Deployed AI Agent

 IBM watsonx

Upgrade?

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Dallas



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Deployment spaces /



### Online deployments

1 space

  Find deployments

Name	Asset type	Status	Space	Copies	Last updated		Created	
<a href="#">AURA(Automated Utility Resource Advi...</a>	AI service	 Deployed	AURA(Automated Utility Res...	1	Aug 2, 2025, 10:08 PM		Aug 2, 2025, 10:08 PM	

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## CONCLUSION

The Smart Home Energy Advisor Agent offers an intelligent way to monitor and manage electricity usage using advanced cloud technologies. It analyzes energy consumption patterns, predicts high bills, and provides simple, personalized tips to help users save power and reduce costs. With an easy-to-use interface and natural language support, it makes energy management more accessible and efficient for everyday users.

# FUTURE SCOPE

- Can connect to real smart meters and devices for more accurate suggestions
- Could support voice assistants like Alexa or Google Assistant
- May offer weather-based energy-saving tips
- Can help users set personal energy goals
- Might include fun challenges to encourage saving power
- Could help communities and energy providers understand usage better
- Potential to promote greener and more efficient energy habits

# IBM CERTIFICATIONS





# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



Kapilavayi Keerthi Swetha Sri

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 18, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/db3da017-a800-44af-91da-0cc49ec5aa83>



# IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to  
**Kapilavayi Keerthi Swetha Sri**

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

Git hub link : <https://github.com/Keerthi-Swetha/IBM-Internship-Project>



**THANK YOU**