Ashbard Energy Efficiency Tracker – Setup Guide

Ashbard Energy Efficiency Tracker – Step-by-Step Setup Guide (Windows)

---
1. PREREQUISITES

Before running the project, ensure your Windows PC has:
• Python 3.9 or higher installed (check via: python --version)
• Git (optional, for cloning if from GitHub)
• pip (Python package manager)
• Internet connection for installing dependencies

---
2. EXTRACT THE ZIP PACKAGE
---
1. Locate the file: Ashbard_Energy_Efficiency_Tracker_v3.zip
2. Right-click → “Extract All…” → Choose a working directory (e.g., C:\Projects\AshbardEnergy)
3. After extraction, you should see the following structure:

■■■ data/
■ ■■■ production_data.csv
■■■ notebooks/
■ ■■■ Ashbard_Energy_Analysis.ipynb
■■■ app/
■ ■■■ app.py
■■■ models/
■ ■■■ trained_forecast_model.pkl
■■■ README.md
■■■ requirements.txt
■■■ docker-compose.yml (optional)

---
3. SETUP VIRTUAL ENVIRONMENT
---
1. Open Command Prompt or PowerShell in the extracted folder.
2. Run these commands:

```
python -m venv venv
venv\Scripts\activate
```

(Your terminal should now show (venv) prefix)

---
4. INSTALL DEPENDENCIES

Run:
```
pip install -r requirements.txt
```

This installs all required Python libraries (Streamlit, pandas, scikit-learn, matplotlib, shap, etc.)

---
5. RUN THE JUPYTER NOTEBOOK (for analytics and model training)
---

1. Start Jupyter:
jupyter notebook

2. Open `notebooks/Ashbard_Energy_Analysis.ipynb`
3. Run all cells (Kernel → Run All)
4. The notebook will generate insights, KPIs, and save model artifacts to `/models` folder.

---
6. RUN THE STREAMLIT DASHBOARD (for visualization and predictions)
---
1. In your terminal (still in project folder), run:

streamlit run app/app.py

2. Wait until Streamlit starts and gives you a local URL (usually http://localhost:8501)
3. Open the link in your browser to view the interactive dashboard.

---
7. OPTIONAL: RUN WITH DOCKER

If you have Docker Desktop installed:
1. Open PowerShell in the project directory.
2. Build the image:
docker build -t ashbard-energy-app .

3. Run the container:
docker run -p 8501:8501 ashbard-energy-app

Then visit http://localhost:8501 in your browser.

---
8. TROUBLESHOOTING TIPS

• If Streamlit fails to start, ensure port 8501 is free or use:
streamlit run app/app.py --server.port 8502

• If SHAP or model loading fails, re-run the Jupyter notebook first to regenerate model artifacts.

• To update dependencies:
pip install --upgrade -r requirements.txt

---
9. PROJECT OUTPUTS

You'll see:
- Live dashboard showing energy production trends, KPIs, efficiency metrics
- Forecasted production for next 6 months (with uncertainty bands)
- Anomaly detection indicators
- SHAP explainability visualizations

Congratulations! ■
You've successfully run the Ashbard Energy Efficiency Tracker locally.
For GitHub or CI/CD deployment, use the provided `.github/workflows/pipeline.yml` template.

Author: Ogar Phil Blaize
Project: Ashbard Energy Company – Production Efficiency Tracker