



Development of 110 KW Agrivoltaic solar plant at KVK Ujwa, Delhi

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Oakridge Energy Pvt. Ltd.  
India | Singapore

## About the KVK Ujwa project



Sl. No.	Description	Details
1	Project capacity	110 KW
2	Commissioning	January 2021
3	Location	Ujwa, Delhi
4	Project developer	Oakridge Energy
5	Scientific partner	Krishi Vidyan Kendra, New Delhi
6	Financing structure	30% equity and 70% debt by domestic financial institutions
7	Mounting structure	80-100 micron hot dipped galvanized structure with 3.5 meters elevation
8	Distribution of power	Through virtual net metering – power distributed to agriculture research institutions
9	Agricultural aspects	Located in agro-climatic zone VI trans-gangetic plains region with annual rainfall of 420-780 mm. Temperature variation from 2-47 degree centigrade. Soil with PH of 8.5 and above
10	Crops	Okra, tomato, brinjal, capsicum, leafy vegetables, root vegetables and cole crops

## Background - About KVK Ujwa 110 KW solar rooftop plant



### Key issue

- Availability of land for solar plants is a key concern
- Utilization of agriculture land for solar plants deprives farmers of livelihood
- Increased deployment of solar could threaten food security

### Agrivoltaics Concept

- Harmonious co-existence of solar and agriculture in the same premises
- Solar on an elevated frame, agriculture underneath
- Planned water channel to reduced water flow on the crops
- Fully functional movement of mechanized machinery
- Equal priority to agriculture and solar

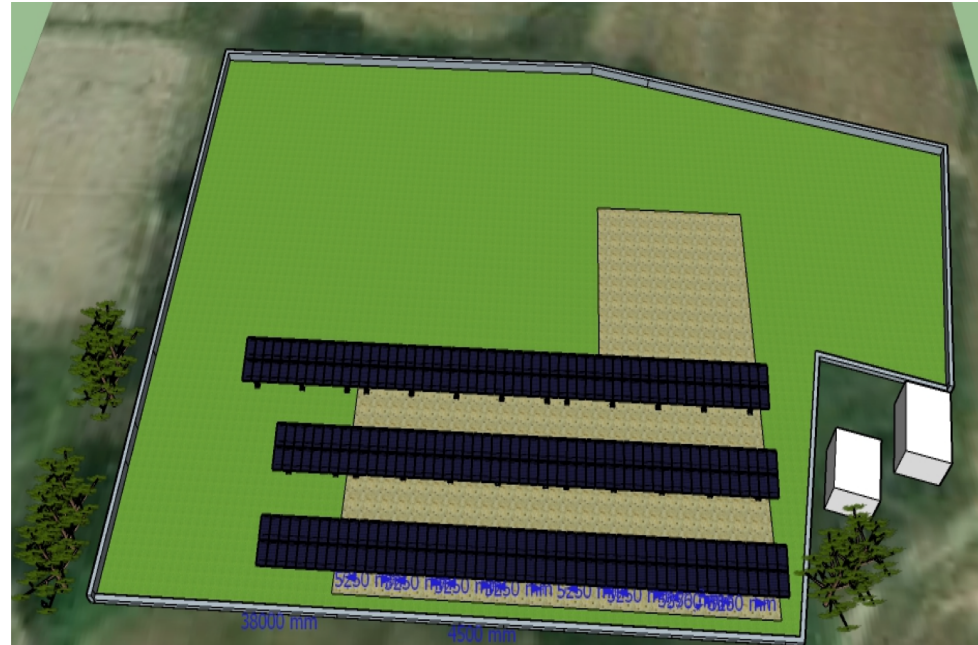
### Alignment with Government policy

- Subsidy available for elevated solar structures (on lines of solar rooftop systems)
- Net metering permits farmer to inject surplus power into the grid
- Govt of India has set a target of 40,000 MW of distributed solar
- KUSUM scheme provides for integrated farm + solar development

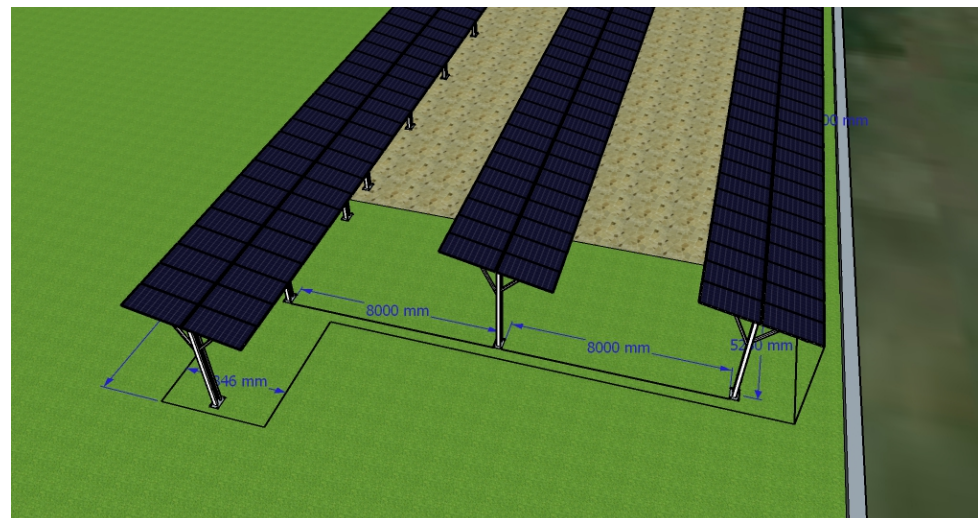


**Solar + Agriculture project is well-aligned with United Nations SDGs and would contribute to reducing the Delhi's carbon footprint**

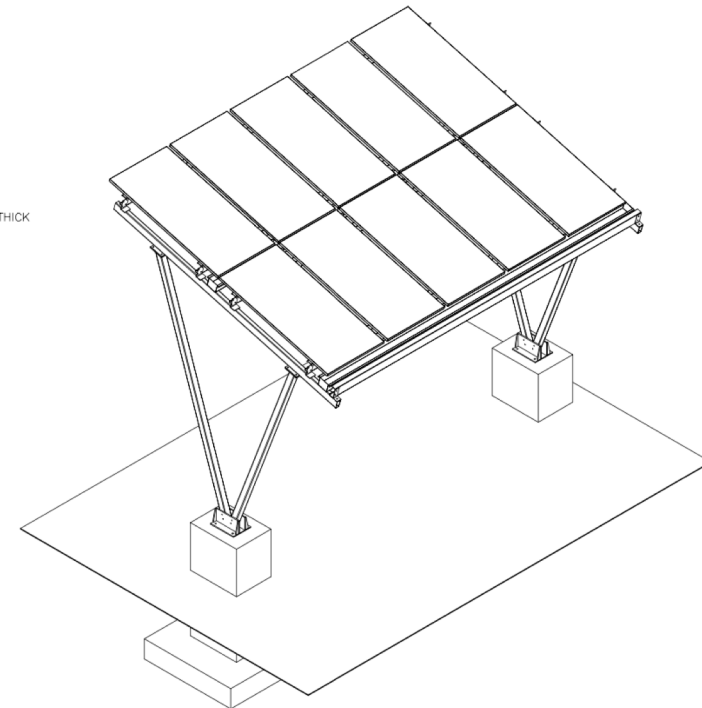
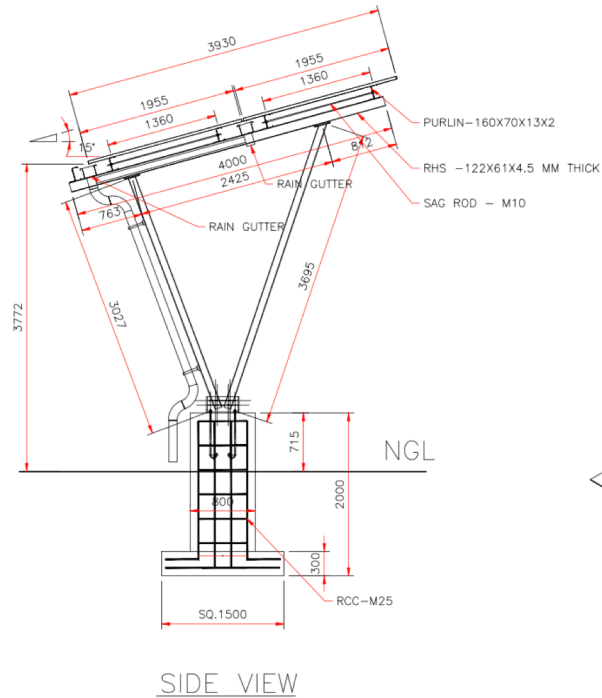
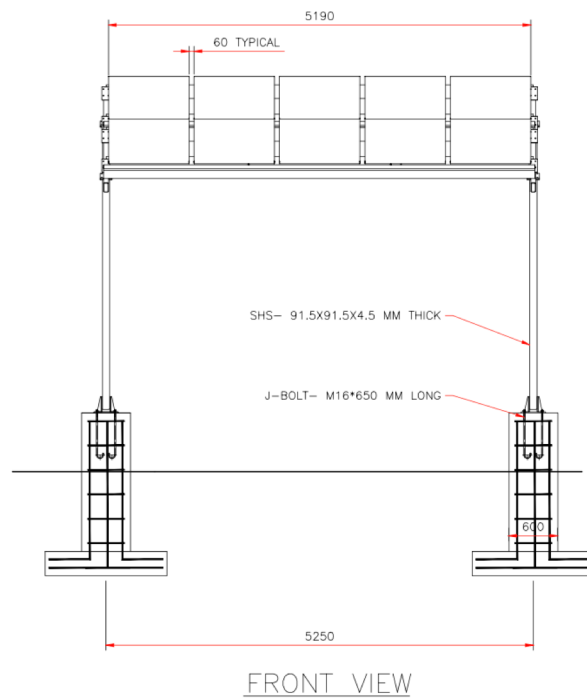
- Organized into three rows of solar panels
- Each row has 2 panel elevated structure
- 8 meters distance between each row of panels
- Distance between columns – 5.25 meters
- Crops - Okra, tomato, brinjal, capsicum, leafy vegetables, root vegetables and cole crops



- ✓ ***Design is spread out to ensure minimum obstruction to farming***
- ✓ ***Only 2 panel frame – to minimize shadow on crops***
- ✓ ***Distance between columns ensures mechanized equipment can travel***



# Unique design aspects... Structure design



- ✓ **Deep columns to ensure safety and stability of structure**
- ✓ **Rain gutter to ensure draining rain / cleaning water**
- ✓ **Height – 3.7 meters – ensures mechanized equipment can pass through**



# Photos



# Photos







### Maintenance

- Availability of space to clean solar panels is a challenge
- Availability of fresh water – need to arrange
- Soil quality – long-term structural stability issues

### Issues during construction

- Buyer of power – the KUSUM tariffs are not conducive
- Stable partner who understands the value of solar – preferably no tractors during agriculture
- Cabling, water channeling
- Depth of foundation

### Agriculture related issues

- Distance between the solar panels – to ensure sunlight for the crop
- Distance between the panels – to provide for mechanized machinery movement
- Stakeholder management – agriculture (vs) solar

**Thank you**

**Contact:**

Shravan Sampath

Phone: +91 11 – 41299992

Mobile: +91 9717936888

Email: shravan.sampath@oakridge.co.in

<http://www.oakridge.co.in>