



THE NEXT WAVE OF SOLAR
PV INSTALLERS:
TRAINING AND
OCCUPATIONAL
STANDARDS

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NOVA SCOTIA RESIDENTIAL SOLAR MARKET OUTLOOK AND LABOUR FORCE STUDY FINAL REPORT

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DUNSKY ENERGY CONSULTING



- The forecasted residential solar PV deployment in Nova Scotia will support up to 1,170 local jobs by 2030; 52% of these jobs are in the installation skillset.
- Nova Scotia's existing labour force has the necessary skills to address market needs, however (has) limited experience in solar installation

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OUR MISSION

BUILDING NOVA SCOTIA'S

ECONOMY AND QUALITY OF

LIFE THROUGH EDUCATION

AND INNOVATION.

The logo for Nova Scotia Community College (NSCC) features the lowercase letters "nscC" in white, set against a dark blue rectangular background.

NSCC'S
DISTINCT
INNOVATION
OPPORTUNITY

The “community” in Nova Scotia Community College is at the heart of why we exist and what we do.

NSCC’s campuses are economic and social catalysts in the communities they serve. They are community assets that provide Nova Scotians with inclusive and flexible access to the core literacies and the specialized, industry-driven training required for tomorrow’s workforce.



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NSCC'S
DISTINCT
INNOVATION
OPPORTUNITY

Program Development Process

- Industry feedback

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HERE

&

NOW



ACADEMIC QUALITY

NSCC IS COMMITTED
TO SERVING THE PROVINCE'S
CHANGING LABOUR MARKET
NEEDS BY PROVIDING
INNOVATIVE, RELEVANT AND
ACCESSIBLE PROGRAMMING
TO NOVA SCOTIA'S DIVERSE
COMMUNITIES.

PHOTOVOLTAIC (PV) PANEL INSTALLATION TRAINING

Learn the techniques of installing and maintaining solar panels (photovoltaic systems).

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Overview

- As energy prices rise, more Nova Scotians are supplementing their traditional home systems with solar power. The Photovoltaic (PV) Panel Installation Training program, offered in partnership with the [Nova Scotia Department of Energy and Mines](#), was created in response to this growing trend.



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Overview

- This training is aimed at anyone wanting to learn the techniques of installing and maintaining photovoltaic systems (solar panels).
- NOTE: *You will not be licensed or trained on connection to, or connection of, electrical components, which are the roles of a certified electrician.*



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Course Description

- This course is intended to provide the knowledge and skills necessary for the installation of photovoltaic (PV) panels on a roof or ground level.
- Learners will be introduced to the concepts of solar electricity generation and operation of PV panels.

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Course Description

- Course activities include theory, equipment, support components and installation labs for these systems.
- Safety considerations will be reviewed for each lab installation.

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Program highlights

- Introduction to the concepts of solar electricity generation and the operation of PV panels
- Course modules include technical and safety training
- Small class sizes provide an opportunity to ask questions, apply your learning and share knowledge

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Learning Outcome 1

Describe various aspects of solar energy and related terms

- Describe the sun's path across the sky during the course of the day and throughout the year.
- Describe advantages and challenges with PV.
- Describe safety hazards related to PV installations.
- Demonstrate safe working practices relating to PV panels and arrays.

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Learning Outcome 2

Explain the PV panel manufacturer ratings.

- Read and interpret manufacturer data sheets.
- Calculate V_{oc} and I_{sc} and describe how each is used.
- Describe how the I/V curves are affected by the solar irradiance.

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Learning Outcome 3

Calculate series and parallel connections of PV panels.

- Calculate string sizing for a given system.
- Calculate array size for a given system.
- Using the Canadian Electric Code (CEC), calculate wire sizing for the string and array.

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Learning Outcome 4

Describe the differences between string and micro-inverters.

- Read and interpret manufacturer data sheets.
- Calculate maximum string and array size for a particular string inverter.
- Select PV panels for a micro-inverter system.

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Learning Outcome 5

Explain the different types of racking systems available.

- Read and interpret manufacturer data sheets.
- Demonstrate the proper installation of a penetrating truss and rafter racking system.
- Demonstrate the proper installation of a non-penetrating truss and rafter racking system.
- Demonstrate the proper installation of a flat-roof ballasted racking system

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Learning Outcome 6

Explain wire management involved in mounting PV panels and micro-inverters to racking systems (including bonding).

- Read and interpret manufacturer data sheets.
- Demonstrate wire management on the different types of racking systems, with and without micro-inverters.
- Demonstrate how to bond the racking and PV panels as per the Canadian Electric Code (CEC).
- Demonstrate how to attach and make connections between PV panels.
- Demonstrate how to attach PV panels to micro-inverters and maximum number of inverters per circuit.

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Learning Outcome 7

Explain the function of a battery in the PV system.

- Battery types and characteristics
- Load calculations
- Charging, discharging and sizing
- Manufacturer specifications

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Participant Safety Requirements

- Hazard Identification
- Lock Out Certification
- NS OHS
- WHMIS
- Fall Arrest Certification
- Standard Level First Aid

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Participant Safety Requirements

Why am I required to have these courses?

- The quick answer is that the College is required by law to make sure all students have this education and training.
- More than that, they are part of NSCC's commitment to safe and healthy learning environments and workplaces. This includes preparing our learners for employment, ensuring each is aware of the safety considerations for their line of work.

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Participant Development

- Demonstrated skills and knowledge development
- Safety awareness, legal requirements and safe work procedures
- Best practice discussion and demonstration

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Participant Development

- Peer-supported learning and community building
- Practice baseline professional expectations
- Introduce roofing materials considerations
- Develop customer-installer standards

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PV “Next Wave” Installer Skills Development

- Multiple deliveries around province- 40+ participants completed course
- Continued NS DoE support- ongoing training opportunities around province
- Positive feedback from participants