A Condensed Summary of Training in RISE PA Industrial Decarbonization Technologies Delivered by Joint Apprenticeship and Training Programs

Projects submitted to the RISE PA Medium-scale Award Track and Large-scale Award Tracks must reduce GHG emissions through installation of 1 or more of the following technologies	***Unionized Building Trades That Train Workers in Each RISE PA Technology***
a) Electrification technologies such as low- or zero-carbon process heat systems, electric heat pumps, and other heating systems based on electricity;	Pipefitters (UA), electricians (IBEW)
b) Energy efficiency technologies, including those that reduce direct fuel or electricity use, such as thermal storage, waste heat recovery, industrial heat pumps, combined heat and power (CHP) systems; utilize insulation, sensors or controls, deploy smart energy management systems, or other advanced energy efficiency technologies;	Sheet metal (SMW), electrical (IBEW), pipefitter (UA), insulators (HFIAW), boilermakers (IBB)
c) Industrial process emission technologies, and waste reduction technologies such as those that reduce waste in industrial applications, including advanced recycling approaches; Fugitive emissions reduction technologies such as regenerative thermal oxidizers and ventilation air systems;	Same as previous row
e) Fuel switching technologies that enable the transition to low carbon fuels such as fluidized bed biomass furnaces, solar-thermal heating systems, clean hydrogen and direct reduced iron shaft furnaces designed or retrofitted for hydrogen-based reduction;	Sheet metal (SMW), electrical (IBEW), pipefitter (UA),
f) On-site renewable energy technologies such as solar photovoltaic systems, wind turbines, micro-hydropower, or geothermal; a) **Note:** Only the portion of a renewable energy system generating electricity that is required on-site at the Industrial Facility will be eligible for funding.	Varies by energy source. Solar: IBEW, LIUNA, operating engineers (IUOE). Wind: IUOE, IBEW, iron workers (IW). Geothermal: IUOE, UA. Micro-IUOE, UA, IBEW.
g) Carbon capture, utilization, and storage (CCUS) technologies such as flue gas carbon capture systems or calcium looping carbon dioxide capture systems; and	IUOE and IBEW
h) Other technology that reduces industrial GHG emissions, as determined by RISE PA.	Depends on the technology.