# Small Modular Nuclear Reactors: Parametric Modeling of Integrated Reactor Vessel Manufacturing Within A Factory Environment Volume 2, Detailed Analysis

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This study continued the work, supported by the Department of Energy's Office of Nuclear Energy, regarding the economic analysis of small modular reactors (SMRs). The study team analyzed, in detail, the costs for the production of factory-built components for an SMR economy for a pressurized-water reactor (PWR) design. The modeling focused on the components that are contained in the Integrated Reactor Vessel (IRV). Due to the maturity of the nuclear industry and significant transfer of knowledge from the gigawatt (GW)-scale reactor production to the small modular reactor economy, the first complete SMR facsimile design would have incorporated a significant amount of learning (averaging about 80% as compared with a prototype unit). In addition, the order book for the SMR factory and the lot size (i.e., the total number of orders divided by the number of complete production runs) remain a key aspect of judging the economic viability of SMRs. Assuming a minimum lot size of 5 or about 500 MWe, the average production cost of the first-of-the kind IRV units are projected to average about 60% of the a first prototype IRV unit (the Lead unit) that would not have incorporated any learning. This cost efficiency could be a key factor in the competitiveness of SMRs for both U.S. and foreign deployments.