

# Economic Performance Checklist

## ***Inheriting a Wiki from Another Team***

When you receive your next team rotation assignment, each team member should visit the wiki site for that building system and rate the site in its current form. A link for formally rating the site is available in the left menu of the wiki, entitled “Inter-Team Evaluation: Ecological Performance”. Click this link to go to the inter-team survey. Each team member must complete this survey based on his or her personal review of the site. Since you must complete the online survey in one sitting, it’s advisable to review the wiki before you attempt to complete the survey, keeping in mind the major sections required in the checklist as your criteria for evaluation. As each team member reviews the site, it’s advisable to make notes in the comments section of the site or in the narrative itself regarding what needs to be fixed or improved. The entire team should meet together to discuss these opportunities and agree on a plan for remediation if necessary. At a minimum, teams should address deficiencies identified by the instructor in the comments section of that wiki. Addressing these deficiencies will bring the wiki up to the minimum standard for the site.

## ***Adding the Economic Performance Module***

The fifth part of your team assignment is to add new content pertaining to economic performance for your assigned building system. This content should include, but not be limited to, the following. Note that each of these sections requires that you have a clear understanding and definition of the scope of systems required for functional equivalence.

With the exception of the last part of the assignment, you should adopt the perspective of a subcontractor that presently builds stick frame buildings and has the capabilities, crews, and equipment for this type of construction. Your answers to the first four parts of the assignment should use stick frame construction as a point of reference.

- Functional equivalence specification – clearly specify the components that should be included in your economic analysis to achieve functional equivalence with the reference system, OVE light wood framed walls with R-19 insulation value. The reference system meets the following functional requirements:
  - Structure – suitable for 2 story residential construction or better; includes structural sheathing to provide shear resistance
  - Enclosure – provides ability to resist air, water, sound, and thermal penetration through the use of an air or vapor barrier (assume standard housewrap). Has an insulation value of at least R-19.
  - Fire resistance – includes ½” gypsum board on the interior to meet fire code
  - Exterior finish – includes aluminum siding to protect wall from weathering.

Provide an inventory of materials for your system that must be included to ensure life cycle functional equivalence between your system and the reference system. Describe all assumptions and data sources in an accompanying narrative.

Note that this section of the assignment should clearly coordinate with the other sections. If the elements of your system defined in this section represent different subcontractor specialties, be sure to include them in the following sections. If constructing your whole wall section would require separate tasks interspersed with other construction activities (e.g., installation of drywall requires completion of roof systems and drying in the building plus installation of MEP systems), be sure to explain this in the narratives in subsequent subsections and clearly account for ALL of the components of the wall necessary to achieve functional equivalence.

- Estimating methodology – describe the approach your estimating department should take to develop first cost estimates for your system. Begin by clearly describing your assumptions for a starting point of your involvement, i.e., what will be in place on site when you arrive to complete your work as a subcontractor, and an ending point, i.e., what your handoff to other subcontractors will include. Include a process map and narrative to describe the specific process used for quantity takeoff of your system, specifically noting the differences in approach between the new system and the stick-built construction your estimating department is used to. Include a checklist of factors that should be considered in takeoffs that might increase unit costs for your product type, including interfaces with other systems, job site conditions, and environmental factors, and describe how these factors would affect unit costs. Discuss appropriate overage or waste factors for your system and include them in your process map. Identify current unit prices for your system elements and clearly describe underlying assumptions used for these unit prices (e.g., crew configurations and other factors). Provide links or citations to sources of price data for your systems. Talking to one or more contractors is highly recommended!
- Contractor investment analysis – using the most reasonable resource allocation scenarios identified in the Human Performance module and considering standard construction methods for wood frame wall construction, compare and contrast the differences in required resources to provide a capability to install the emerging system as opposed to the reference system. Will additional equipment or expertise be required? Would existing staff have to receive training or be certified? Estimate the investment cost your company would have to undertake to be able to offer a capability in the emerging product area, given that it already has a capability in installing wood frame walls. Also discuss how renting equipment and/or hiring temporary employees might change the recommendations of your investment analysis. Would it make sense to subcontract the work?
- Procurement analysis – call at least three suppliers identified in the Technological Performance module to determine whether or not there are local suppliers for the required materials and supplies for your systems in the Roanoke area. Evaluate how much lead time is required to obtain materials for a project, whether or not product has to be special-ordered, and if so, where the product is ultimately being sourced. Comment on any procurement constraints you discover, such as the need to buy dual flush toilets by the pallet from Ferguson’s in order to have them delivered to Blacksburg, and discuss whether there would be a need for your company to maintain its own inventory of product to properly service your market. Discuss any special transportation costs or considerations associated with procuring your product.
- Life cycle cost comparison– do a search to determine life cycle cost information for your system FROM AN OWNER’S PERSPECTIVE. Focus specifically on energy savings that may be expected from the use of your system vs. a traditional wood frame wall (or other reference system if mentioned by your sources). Discuss the cost impacts your systems have on related systems (see linkages to other systems in System Scoping as a starting point), such as enabling a reduction in HVAC system size due to improved thermal performance or other integration effects. Inventory and compare all non-traditional quantifiable costs and benefits and all qualitative costs and benefits that differ between your product and a traditional wood frame wall system in terms of information relevant for the owner. Include environmental benefits and costs, quality of life issues, and risk issues that were discussed in the ecological performance damage/synergy analysis. Provide links to sources for all your information. If all externalities were included as part of decision making, which alternative would be preferable from the owner’s standpoint?

Be sure to spell- and grammar-check your work and review for consistency and format. All your sources should be properly cited and referenced using ASCE reference guidelines. Plagiarism will be noted in this assignment and documented as per the syllabus.