



Pay for Performance - NC Technical Tip

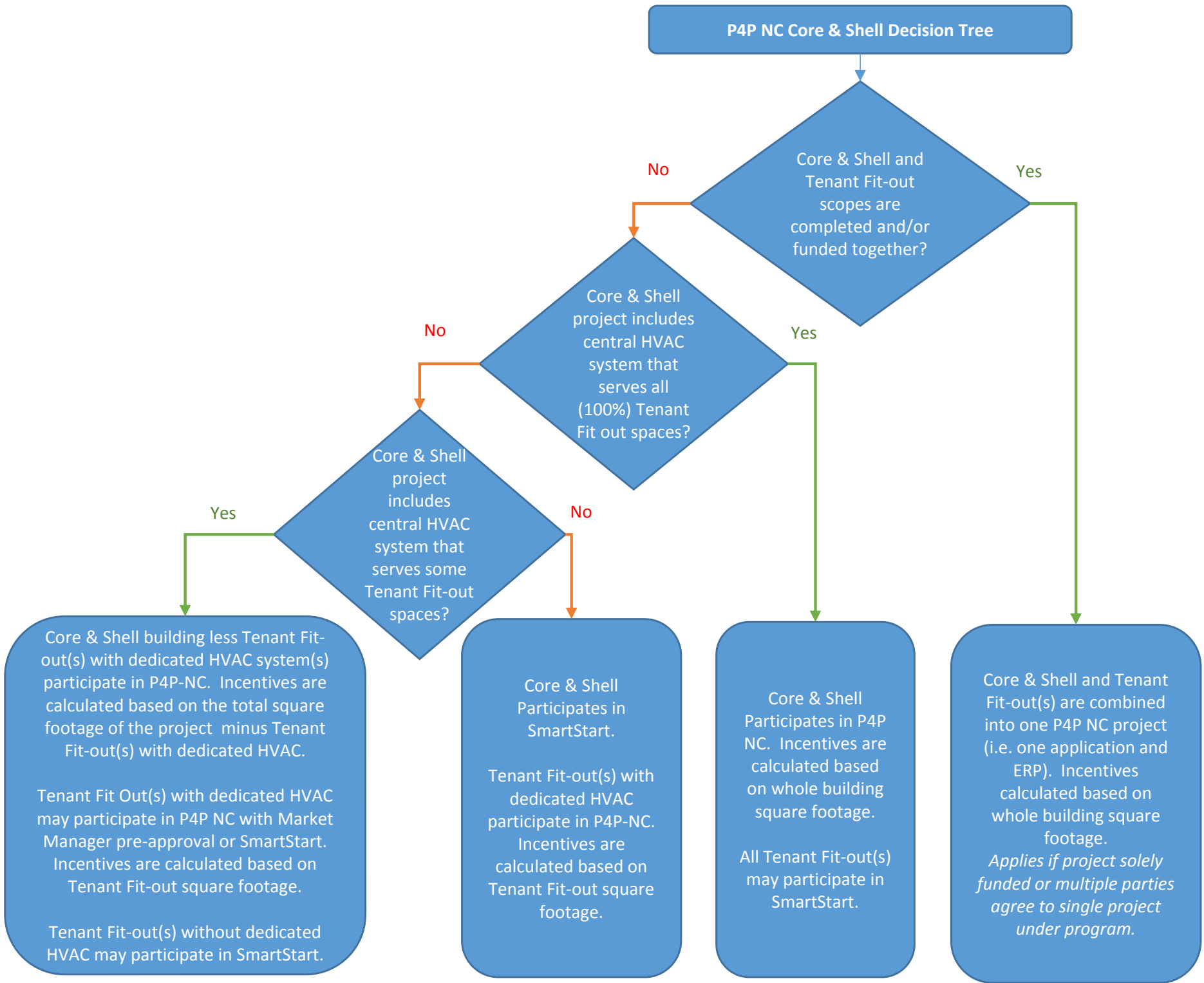
Modeling Core and Shell Projects

The P4P New Construction (P4P NC) program is unique in that the incentive is based on conditioned square footage and not direct energy savings. Although there is a minimum energy savings threshold, by design, the P4P NC program is meant to cover **all** energy efficiency measures within an assigned area/building(s). Therefore, P4P NC projects are required to evaluate the whole building design. Further, if a P4P NC Application is submitted to the program, that same building(s) cannot also submit applications to other programs. An exception to this rule may apply to eligible projects pursuing Core & Shell separate from Tenant fit-out improvements.

This Technical Tip presents the approaches that must be used to properly apply for and receive program incentives, as well as facilitate modeling assumptions, for Core & Shell versus Tenant fit-outs within the same building.

The flow chart on the next page summarizes how Core & Shell and Tenant fit-out projects will be handled in P4P NC with additional detail and examples following.

P4P NC Core & Shell Decision Tree



Core & Shell and Tenant Fit-out scopes are completed and/or funded together?

Yes

No

Core & Shell project includes central HVAC system that serves all (100%) Tenant Fit out spaces?

Yes

No

Core & Shell project includes central HVAC system that serves some Tenant Fit-out spaces?

Yes

No

Core & Shell building less Tenant Fit-out(s) with dedicated HVAC system(s) participate in P4P-NC. Incentives are calculated based on the total square footage of the project minus Tenant Fit-out(s) with dedicated HVAC.

Tenant Fit Out(s) with dedicated HVAC may participate in P4P NC with Market Manager pre-approval or SmartStart. Incentives are calculated based on Tenant Fit-out square footage.

Tenant Fit-out(s) without dedicated HVAC may participate in SmartStart.

Core & Shell Participates in SmartStart.

Tenant Fit-out(s) with dedicated HVAC participate in P4P-NC. Incentives are calculated based on Tenant Fit-out square footage.

Core & Shell Participates in P4P NC. Incentives are calculated based on whole building square footage.

All Tenant Fit-out(s) may participate in SmartStart.

Core & Shell and Tenant Fit-out(s) are combined into one P4P NC project (i.e. one application and ERP). Incentives calculated based on whole building square footage.

Applies if project solely funded or multiple parties agree to single project under program.

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Definitions

- **Tenant fit-out** is defined as an area that has components specifically designed for that area based on tenant needs, and is funded by the tenant. For some Tenant fit-outs, components may be limited to lighting and equipment loads if the entire building is served by a central HVAC system (e.g. central plant). For others, equipment may include dedicated HVAC systems that serve the tenant space.
- **Core & Shell** is defined as the systems and parts of the building that are not Tenant fit-out related, and are funded by the developer (or entity other than tenant, such as building owner, land owner, or landlord).
- **Ratepayer** is the entity whose name will be on the facility's future utility bill(s) and will be contributing to the Societal Benefits Charge (SBC), and which is therefore eligible for incentives. Depending on the circumstance of each project, the *ratepayer* may be the developer, building owner, or tenant.
- **Customer**, for program purposes, is the *ratepayer* that is funding the project/improvements except as described in Assignment of Incentives section. Customer must be listed on P4P NC Application and all supporting documentation (e.g. W9 form, Request for Incentives, etc.).

ASSIGNMENT OF INCENTIVES

In P4P New Construction, it is common that the project/improvements are paid for by an entity other than the *ratepayer*. For example, the future tenant will be the *ratepayer*, but the developer is building and funding the project. In this case the entity that pays for the project/improvement (in this case the developer) may be listed as the *Customer*. A supplemental, formal memorandum from the *Ratepayer* (in this case the future tenant) must also be supplied and include the following information:

- Identify *Customer* as listed on the Application and their relationship to the project (e.g. building owner, developer, etc.);
- Identify *Ratepayer* and their relationship to the project (e.g. tenant);
- Acknowledgement that the *Ratepayer* is technically eligible for the incentives through this program;
- Acknowledgement that *Ratepayer* is not funding this project;
- Approval to “sign over” all P4P incentives to the *Customer* for the purpose of this project; and
- Must be signed by appropriate authority at both *Customer* and *Ratepayer* firms and include their title/role.

This memo should be provided with the P4P NC Application if all information is known, otherwise it must be provided no later than with the As-Built Energy Reduction Plan.

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Project Scenario 1: Core & Shell and Tenant Fit-out are Combined

In this scenario, all aspects of the design (whole building) must be included under a single P4P NC Application and treated as a single project. This may apply where:

- Developer is funding and constructing both Core & Shell and Tenant fit-out.
- High performance systems are specified and funded for the Tenant space separate from Core & Shell, **but** the building owner and tenant come to an agreement to include both scopes of work under a single project.

Projects under this scenario will follow all Program Guidelines as typical.

Project Scenario 2: Core & Shell Separate from Tenant Fit-out

This scenario applies when the Core & Shell work is known but the tenant space development is unknown and/or is funded separately. Therefore, the Core & Shell is treated as a separate project from the Tenant fit-out.

For most cases, a building may apply for P4P NC for either Core & Shell or Tenant fit-out(s), not both, except as discussed in Example 3. **The determining factor depends on which scope will include design and construction of the central HVAC system.** For example, if the Core & Shell scope includes building envelope, common area and exterior lighting, and central HVAC systems, this project may be eligible to apply for incentives under P4P NC, in which case:

- P4P NC incentives will apply to all conditioned square footage of the building serviced by the HVAC in the project's scope of work.
- The Proposed Energy Reduction Plan should clearly describe Core & Shell and Tenant spaces in the 'Project Description' section. The space types and areas listed in *Table 4-Spaces* should only reflect the areas associated with the project, per above, to calculate incentives correctly.
- The project scope applying for P4P NC (e.g. Core & Shell OR Tenant Fit-out) must be able to meet all requirements for P4P NC (e.g. 15% energy cost savings) on its own.

Any Tenant fit-out or Core & Shell work not included in P4P NC, (and connected to a non-residential electric/gas account paying into the SBC), may seek incentives through the SmartStart Prescriptive or Custom Measure programs for eligible equipment.

- Recall the above *Assignment of Incentives*: If a tenant plans to apply for SmartStart incentives, they should plan to **install their own utility accounts** under their name in order to secure incentives. Otherwise, similar steps may be taken as detailed above, but should be discussed with the Market Manager **prior** to submittal.

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MODELING CONSIDERATIONS

Per ASHRAE 90.1 Section G1.3 Trade Off Limits, “when the proposed modifications apply to less than the whole building, only parameters related to the systems to be modified shall be allowed to vary. Parameters relating to unmodified existing conditions or to future building components shall be identical for determining both the baseline building performance and the proposed building performance. *Future building components* shall meet the prescriptive requirements of Sections 5.5, 6.5, 7.5, 9.5, and 9.6.”

Therefore, for Core & Shell projects applying to P4P NC, tenant spaces shall **NOT** be excluded from the whole building model, but instead must be modeled as energy neutral. In addition, these spaces shall be modeled using set points and schedules that are typical of the space type. Core & Shell systems shall follow Program Guidelines for establishing baseline and proposed systems within the model.

For Tenant fit-outs applying to P4P NC, the envelope included in the Core & Shell scope shall be treated as an “unmodified existing condition” and must be modeled to match the Core & Shell design in both the baseline and proposed models rather than ASHRAE 90.1 Table 5.5 values, unless design details are unknown.

Examples

Example 1:

The developer designed and will construct envelope and HVAC, as well as lighting in the lobby, corridors, and other common areas, of a future office building (Core & Shell scope). Tenants that will lease office spaces are responsible for lighting design and fixture purchase/installation in their spaces (Tenant Fit-out).

Program Path

The Core & Shell scope may participate in P4P NC, and may qualify for incentives based on envelope, HVAC, and common area lighting design assuming all program requirements are met. The incentives will be calculated based on the whole building square footage.

The Tenant Fit-out scope may participate in SmartStart for eligible lighting to be installed inside the offices, supplemental tenant-metered HVAC (if any), as well as certain plug loads.

Modeling Approach

The Core & Shell project participating in P4P NC must follow P4P NC Program Guidelines, with the lighting included in the tenant scope treated as a “future building component.” The tenant space must be explicitly modeled, where lighting must be modeled as meeting minimum requirements of ASHRAE 90.1, Section 9 in both the baseline and proposed models (i.e. energy neutral). Miscellaneous plug loads appropriate for tenant occupancy type must also be included in the simulation; assume office occupancy if tenant occupancy type is unknown.

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Example 2:

The developer designed and will construct building envelope for a future retail strip mall (Core & Shell scope). Tenants are responsible for HVAC and lighting design in the areas that they will lease (Tenant Fit-out).

Program Path

The Tenant fit-out scope(s) may participate in P4P NC and apply for incentives for comprehensive design improvements, assuming all program requirements are met. The incentives will be calculated based on the square footage of the participating Tenant spaces.

The Core & Shell scope may participate in SmartStart Custom Measure for incentives for efficient building envelope, assuming program requirements are met.

Modeling Approach

The Tenant scope must be modeled in accordance with P4P NC Program Guidelines, with the envelope included in the Core & Shell scope treated as an “unmodified existing condition” as described in ASHRAE 90.1 Section G1.3. Envelope must be modeled to match the Core & Shell design in both the baseline and proposed models rather than ASHRAE 90.1 Table 5.5 values. Only the Tenant portion of the building envelope needs to be modeled (if only a part of total strip mall).

Example 3:

The developer designed and will construct envelope, HVAC, and common area lighting for a future mixed-use facility (Core & Shell scope). Tenants that will lease spaces are responsible for lighting design and fixture purchase/installation in their spaces (Tenant Fit-out). One tenant in particular, “AZ Co.”, will occupy one quadrant of the building and plans to design and construct their own heating and cooling, and electricity autonomous from the remainder of the building.

Program Path

The Core & Shell scope may participate in P4P NC, and may qualify for incentives based on envelope, HVAC, and common area lighting design assuming all program requirements are met. The incentives will be calculated based on the whole building square footage **minus the square footage to be occupied by tenant AZ Co.**

AZ Co. may participate in SmartStart for eligible equipment. Market Manager may allow said tenant to pursue P4P NC in lieu of SmartSmart on a case by case basis (if eligible).

The remaining Tenant scope may participate in SmartStart for lighting inside their spaces.

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Modeling Approach

The Core & Shell project participating in P4P NC must follow the rules described in the P4P NC Program Guidelines. The space to be occupied by AZ Co. may be excluded from the energy model. The remaining tenant spaces must be explicitly modeled with lighting meeting minimum requirements of ASHRAE 90.1, Section 9 in both the baseline and proposed models (i.e. energy neutral). Miscellaneous plug loads appropriate for tenant occupancy type must also be included; assume office occupancy if tenant occupancy type is unknown.

Additional References

The 2009 Edition of the *LEED Reference Guide for Green Building Design and Construction* contains Core & Shell Energy Modeling Guidelines, which may be used to facilitate modeling assumptions not covered in this Technical Topic with prior approval from Market Manager.