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What is PROWAG?

CPSM Section 4.2 "Accessibility Standards for State-Owned Facilities" requires that the design, construction, and alteration of state-owned facilities comply with the Department of Justice's [2010 ADA Standards for Accessible Design](#).

The *2010 ADA Standards for Accessible Design* covers access from the Public Way into and within buildings and structures.

CPSM Section 4.2.2.9 Site Elements references the "*Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-Of-Way (PROWAG) dated July 26, 2011*" as an addition to the *2010 ADA Standards for Accessible Design* Section 201.1. PROWAG applies to site elements in agency outdoor programs and site elements on state-owned property that is Public Way, but does not apply to Virginia Department of Transportation Right-Of-Ways.

PROWAG ensures site elements are readily accessible to and usable by pedestrians with disabilities, which includes pedestrians with mobility, sight, and hearing impairments. Those site elements that the requirements of PROWAG apply to include:

- sidewalks, pedestrian overpasses and underpasses, and other pedestrian circulation paths
- pedestrian street crossings, medians, and pedestrian refuge islands, including requirements for curb ramps or blended transitions, and detectable warning surfaces
- pedestrian street crossings at roundabouts, including the requirements for detectable edge treatments where pedestrian crossing is not intended, and pedestrian activated signals at multi-lane pedestrian street crossings
- pedestrian signals, including requirements for accessible pedestrian signals and pedestrian activated signals



- transit stops and transit shelters for buses including requirements for boarding and alighting areas at sidewalks or street level, boarding platforms, and route signs
- on-street parking that is marked or metered
- pedestrian signs, including requirements for visible characters on signs and alternative requirements for audible sign systems and other technologies
- street furniture for pedestrian use, including drinking fountains, public toilet facilities, tables, counters, and benches, and
- ramps, stairways, escalators, handrails, doors, doorways, and gates

PROWAG's structure is similar to the *2010 ADA Standards for Accessible Design* in that it is broken down into distinct chapters:

Chapter 1, "Application and administration", covers purpose, effect on existing facilities, equivalent facilities, conventions, figures, units of measure, referenced documents, and definitions.

Chapter 2, "Scoping Requirements", addresses what items of new construction and alterations are covered by PROWAG and references technical standards.

Chapter 3, "Technical Provisions", contains detailed specifications for new construction and alterations.

Chapter 4, "Supplementary Technical Provisions", includes specifications adapted from the ADA Guidelines for rights-of-ways.

The PROWAG guidelines are available for free download from the United States Access Board at:

<https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>

The screenshot shows the United States Access Board website. The header includes the logo and the text "UNITED STATES ACCESS BOARD Advancing Full Access and Inclusion for All". A search bar is present with the option to "Search Proposed Guidelines". The navigation menu includes "The Board", "Guidelines & Standards", "Training", "Enforcement", and "Research". The breadcrumb trail is "Home > Guidelines and Standards > Streets & Sidewalks > Public Rights-of-Way > Proposed Rights-of-Way Guidelines". The main heading is "Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way". Below this, there is a "TABLE OF CONTENTS" with links to "Introduction", "Major Issues", "Overview of Proposed Guidelines", and "Impacts on State". The text indicates the guidelines were published in the *Federal Register* on July 26, 2011, under 36 CFR Part 1190, Docket No. ATBCB 2011-04. A note mentions a February 13, 2013, notice supplementing the guidelines for shared use paths. On the right, there are links for "PUBLIC RIGHTS-OF-WAY", "About this Rulemaking", "Proposed Guidelines (2011)", "Guidance and Research", "Background", and "Other Resources".

Energy recovery is required for all air-handling units with an amount of outdoor air greater than or equal to 10 percent of the supply air and operating more than 8,000 hours per year in accordance with the new 2015 VECC TABLE C403.2.7 (2). This new energy conservation code requirement change is significant.

As a cautionary note, there are eleven (11) exceptions to VECC C403.2.7, most of these are straightforward. One of the exceptions (#8); however, seems to allow a circumvention of the energy conservation code. It exempts ERV systems where the largest source of air exhausted at a single location is less than 75% of the design outdoor air flow rate. In practical terms, this exception implies that segmenting or subdividing the discharge locations of exhaust air systems would prevent the utilization of energy recover requirements, but this is not a correct application.

Types of Airside Energy Recovery

There are various types of energy recovery strategies employed to meet the requirements of VECC C403.2.7. There are permeable and non-permeable type heat exchangers, heat pipe, run-around heat recover coil loops, and total energy and sensible energy recovery wheels. The most prevalent type are the total energy recovery wheel and fixed plate type heat exchanger shown below in Figures 1 and 2, respectively.

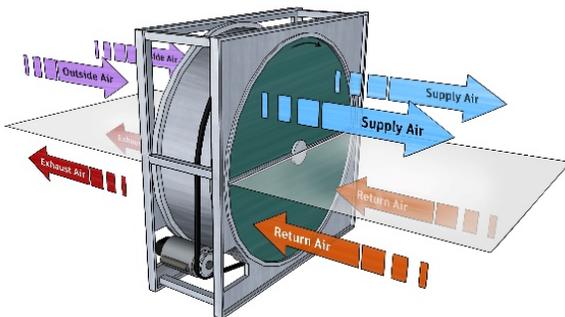


Figure 1 – Energy Recovery Wheel

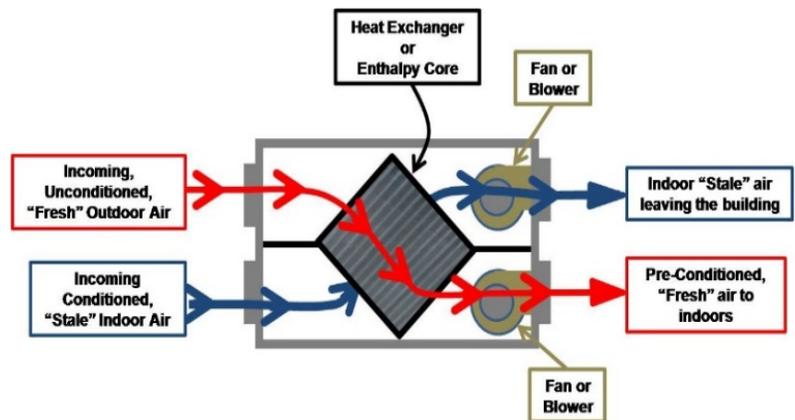


Figure 2 – Fixed Plate Energy Recovery Unit

Code Compliance Check

Examining a code compliance example where the supply airflow rate of a fan system exceeds the values specified in Tables C403.2.7 (1) and C403.2.7 (2) and none of the 11 exceptions are applicable. The energy recovery system shall have the capability to provide a change in the enthalpy of the outdoor air supply of not less than 50 percent of the difference between the outdoor air and return air enthalpies, at winter and summer design conditions. These terms can be expressed, as follows:

$$h_{o1} - h_{o2} \geq 50\% (h_{o1} - h_{R3}) \quad \text{Eq. (1);}$$

where:

h_{o1} = enthalpy of incoming outside air (State 1);

h_{o2} = enthalpy of conditioned supply outside air (State 2); and

h_{R3} = enthalpy of return/exhaust air entering device (State 3).

The thermodynamic states are taken at the location identified in Figure 3.

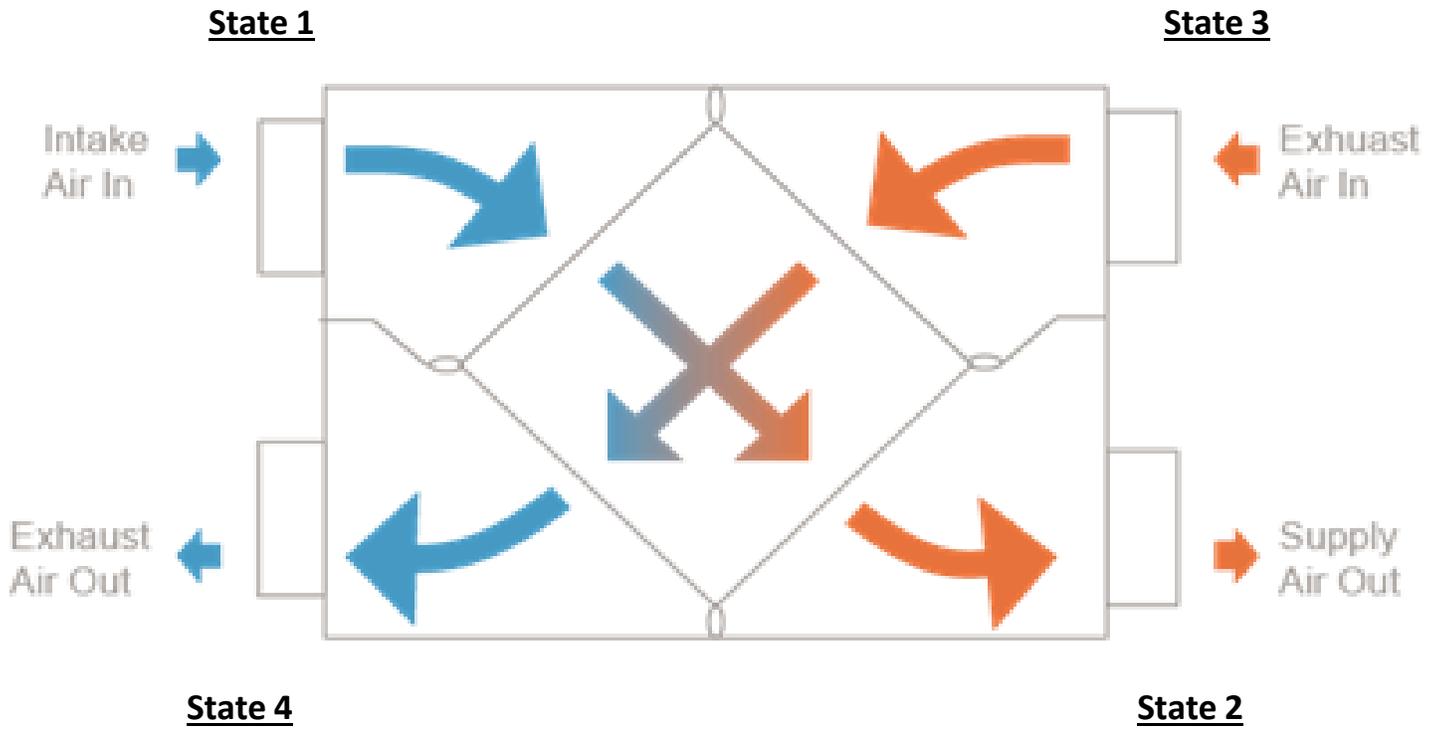


Figure 3- Location of Thermodynamic States

Both summer and winter conditions shall be verified for compliance. A short case study follows in the next section.

A Case Study in Tidewater

A 100% dedicated outside air systems (DOAS) with a fixed plate energy recovery system employed for the required ventilation (outside) air and exhaust air was submitted for a new residential project in the Tidewater Region of the Commonwealth. The following conditions were scheduled on the mechanical drawing:

DEDICATED OUTSIDE AIR SYSTEM (100% outside air ERU)								
UNIT NO.	FIXED PLATE HEAT EXCHANGER							
	SUMMER				WINTER			
	OA EAT °F DB/WB	OA LAT °F DB/WB	RA EAT °F DB/WB	EA LAT °F DB/WB	OA EAT °F DB/WB	OA LAT °F DB/WB	RA EAT °F DB/WB	EA LAT °F DB/WB
DOAS-1	93.0/77.0	83.5/71.1	75.0/62.0	88.5/71.7	22.0/20.0	47.4/39.8	70.0/56.0	34.7/33.8

The enthalpy for each thermodynamic state was determined with the use of an on-line psychrometric calculator. The code was checked at the summer and winter design conditions, as follows:

a. Summer Design Condition

Given:

h_{o1} = enthalpy of incoming outside air	= 40.33 Btu/lb _m
h_{o2} = enthalpy of conditioned supply outside air	= 34.88 Btu/lb _m
h_{R3} = enthalpy of entering return/exhaust air	= 27.73 Btu/lb _m

Applying Eq. (1): $h_{o1} - h_{o2} \geq 50\% (h_{o1} - h_{R3})$;

$$40.33 - 34.88 \geq 0.50 (40.33 - 27.73) \text{ or } 5.45 \geq 6.30$$

 Does Not Comply

b. Winter Design Condition

Given:

h_{o1} = enthalpy of incoming outside air	= 7.157 Btu/lb _m
h_{o2} = enthalpy of conditioned supply outside air	= 15.11 Btu/lb _m
h_{R3} = enthalpy of entering return/exhaust air	= 23.74 Btu/lb _m

Applying Eq. (1): $h_{o1} - h_{o2} \geq 50\% (h_{o1} - h_{R3})$;

$$7.157 - 15.11 \geq 0.50 (7.157 - 23.74) \text{ or } 7.983 \geq 8.2915$$

 Does Not Comply

c. Conclusion

Although the literature from this well-known manufacturer published a 50-60% total effectiveness, it did not prove to meet the 2012 VECC. In this example, the originally proposed units were not acceptable and had to be re-selected.

Summary

The 2015 *Virginia Energy Conservation Code* has expanded the requirements for energy recovery systems but left the thermodynamic requirement from the 2012 VECC in place. It is always important to reconcile the manufacturer's published data with the code requirements.

Procurement Reviews and Recommendations for CM and DB Projects

When an agency or institution wants to use the Construction Management at Risk or the Design-Build process, Chapter 43.1 of the Code of Virginia requires that the "State Public Body" or "Covered Institution" receive a DGS review and recommendation for the selected procurement method. This requirement is independent of project size or higher education authority level.

For large Design-Build and Construction Management projects, it is clear that this DGS review and recommendation is required. However, for smaller maintenance related Design-Build projects, it can be less obvious. Many maintenance projects require a building permit. As a result, plans must be submitted bearing the seal of the A/E of Record. When the A/E of Record is either a subcontractor or employee of the Contractor, then the procurement is a Design-Build procurement and the Chapter 43.1 requirements apply including DGS review and the methodology for procurement.

For more information on these requirements, view the [CM@Risk and Design-Build](#) webpage on the DGS/DEB website. Completed procurement evaluations may be viewed on the [CM and DB Procurement Evaluation](#) webpage.

VCCO Update

Jason Illig with the Department of Aging and Rehabilitative Services recently passed the Virginia Construction Contracting Officer (VCCO) certification examination.

Virginia Construction Contracting Officers are state and local government employees who have completed the necessary training and successfully passed a multi-part examination focused on state procurement law, policy and procedures. VCCOs perform several key functions in delivering projects including the procurement of professional services; the receipt, opening and review of bids; and in some cases the approval of CO-8 forms for recommending the award of construction contracts.

CPSM and CPSM Forms Update

The following new or revised DEB forms are now available on the [DGS Forms Center](#). It is recommended to download the [DGS-30-000 form](#), as it contains hyperlinks to all other forms for quick access. The [DGS-30-000](#) also provides a brief description of the changes to the recently revised forms.

Form #	Form Name	Description/Key Word	Rev. Date (mm/yy)
DGS-30-000	DEB Forms Master List		03/19
DGS-30-004	A/E Firm Data Forms	AE-1 – AE-6	03/19



A new CPSM edition will be issued soon to incorporate changes in the law, codes and policies. Also, approximately twenty related CPSM forms were recently revised and are with the Office of the Attorney General for final review and comment. A future DEB Notice and Newsletter article will announce when the new CPSM and CPSM forms are available for download and use.