Office of Regulatory Management

Economic Review Form

Agency name	Department of Environmental Quality	
Virginia Administrative Code (VAC) Chapter citation(s)	9 VAC15-60	
VAC Chapter title(s)	Small Renewable Energy Projects (Solar) Permit by Rule (PBR)	
Action title	Amend 9VAC15-60 to comport with the requirements of Chapter 688 of the 2022 Acts of Assembly	
Date this document prepared	May 9, 2024 - Revised July 11, 2024	
Regulatory Stage (including Issuance of Guidance Documents)	Proposed and Periodic Review	

Cost Benefit Analysis

Complete Tables 1a and 1b for all regulatory actions. You do not need to complete Table 1c if the regulatory action is required by state statute or federal statute or regulation and leaves no discretion in its implementation.

Table 1a should provide analysis for the regulatory approach you are taking. Table 1b should provide analysis for the approach of leaving the current regulations intact (i.e., no further change is implemented). Table 1c should provide analysis for at least one alternative approach. You should not limit yourself to one alternative, however, and can add additional charts as needed.

Report both direct and indirect costs and benefits that can be monetized in Boxes 1 and 2. Report direct and indirect costs and benefits that cannot be monetized in Box 4. See the ORM Regulatory Economic Analysis Manual for additional guidance.

Omitted Table 1c pursuant to ORM Regulatory Economic Analysis Manual. Chapter 688 amended and reenacted § 10.1-1197.6 of the Code of Virginia, mandating DEQ to develop mitigation measures for impacts to prime agricultural soils and contiguous forest lands.

Table 1a: Costs and	Benefits of the	Pronosed Chang	es (Primary Option)
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Table 1a: Costs and Benefits of the Proposed Changes (Primary Option)			
(1) Direct &	Direct Costs: Describe the direct costs of this proposed change here.		
Indirect Costs &			
Benefits	Background of proposed regulatory changes:		
(Monetized)	§ 10.1-1197.6 of the Code of Virginia and the current solar PBR		
	regulation requires a mitigation plan for any project with significant		
	adverse impacts to natural or historic resources. In 2022, Chapter 688		
	amended and reenacted § 10.1-1197.6 of the Code by adding the		
	following language: A project will be deemed to have a significant		
	adverse impact if it would disturb more than 10 acres of prime		
	agricultural soils or 50 acres of contiguous forest lands, or if it would		
	disturb forest lands enrolled in a program for forestry preservation		
	pursuant to subdivision 2 of § 58.1-323. The addition of this language in		
	the statute requires DEQ to develop mitigation for impacts to prime		
	agricultural soils and forest land.		
	DEQ is proposing two types of mitigation for impacts to prime		
	agricultural soils, contiguous forest lands or C1 or C2 ecological cores:		
	1. Conservation Easement or Easements:		
	Conservation easements will require direct protection of land by		
	acquisition of a conservation easement or easements. The		
	following mitigation ratios* are proposed:		
	 1:1 mitigation ratio for disturbance of more than 10 acres of 		
	prime agricultural soils		
	 1:1 mitigation ratio for disturbance of more than 50 acres of 		
	contiguous forest lands		
	 1:1 mitigation ratio for disturbance of forest lands enrolled in a 		
	program for forestry preservation		
	 7:1 mitigation ratio for disturbance of forest land categorized as 		
	Ecological Core C1		
	 2:1 mitigation ratio for disturbance of forest land categorized as 		
	Ecological Core C2		
	*Mitigation ratio means the ratio of the area conserved to the area		
	disturbed. For example, a ratio of 1:2 would require one-half acre		
	conserved for each acre of disturbance.		
	2. In-Lieu Fees:		

"In-lieu" of the applicant acquiring conservation easements, the applicant pays a fee to a third party designated by DEQ. The in- lieu fee will be used to acquire a conservation easement. The amount of the in-lieu fee is calculated to approximately equal the cost to the applicant of acquiring the required conservation easements.
Direct Costs:
 Direct costs such as permit application fees, survey requirements for natural and historic resources, and Coastal Avian Protection Zone mitigation fees are omitted from this analysis because they will not change under the proposed regulation or the status quo alternative. Direct cost of a conservation easement or in-lieu fee fund payment are omitted from this analysis because they are transfer payments. 1. Increased cost for preparing the application.
Determining the direct costs for a conservation easement or in-lieu fee payment will depend on the number and type of acres impacted. All applicants will incur additional direct costs to map and calculate the impact of their proposed development on prime agricultural soils, contiguous forest lands and C1 and C2 ecological cores. The regulations identify geographic information system (GIS) resources that may be used to identify these resources without physical surveys. Based on informal interviews of consultants, the additional time required to map and calculate the impacts on these resources may average approximately 8 hours. Assuming a rate of \$100/ hour for consultant time, this increased cost per application may be \$800.
Indirect Costs: Describe the indirect costs of the proposed change.
The indirect costs of mitigation for significant adverse impacts to prime agricultural soils, contiguous forest lands and C1, C2 ecological cores cannot be quantified by DEQ. It is possible the mitigation requirements could slow the development of utility scale solar development in the commonwealth. It is also possible the mitigation requirements could result in increased consumer costs for electricity.
Direct Benefits: Describe the direct benefits of this proposed change here.
The new mitigation ratios will provide protections for Virginia's farms and forest lands. The new mitigation ratios will allow developers to determine the up-front costs associated with utility scale solar projects.

Value of conserved forest lands: The total annual financial contribution of forest products in Virginia has been estimated at \$23,600,000,000. There are 13,107,486 acres of privately owned forest land in Virginia. Therefore, the annual per acre financial contribution of private forest land is approximately \$1,800. The total annual loss of forest land due to land use conversion is 59,782 acres. This means the probability of conversion of any acre of forest in any given year is 0.46%. The annual value of protecting an acre of forest land (per acre financial contribution times probability of loss) equal \$8.21. The present discounted value of protecting an acre of forest land in perpetuity (annual value divided by 3% discount rate) equals \$273.73.

Value of conserved prime agricultural soils: The total annual financial contribution of agricultural products in Virginia has been estimated at \$82,329,000,000. There are 7,309,687 acres of farmland in Virginia. Therefore, the annual per acre financial contribution of agricultural land is approximately \$6,281. The total annual loss of farmland due to land use conversion is 97,600 acres. This means the probability of conversion of any acre of forest in any given year is 0.74%. The annual value of protecting an acre of farmland (per acre financial contribution times probability of loss) equal \$46.77. The present discounted value of protecting an acre of farmland in perpetuity (annual value divided by 3% discount rate) equals \$1,558.99.

Value of conserved prime agricultural soils: Calculating the value of preserving C1 and C2 ecological cores requires determining the value of ecosystem services and non-use values (such as biodiversity preservation). Although we know these lands have value, DEQ is unable to calculate their economic value. There are approximately 2,926,000 acres of C1 ecological cores and 2,288,000 acres of C1 ecological cores. We do not have direct data on the rate of loss of these cores but since these are forests can estimate the annual probability of conversion is approximately 0.74%.

Indirect Benefits: Describe the indirect benefits of the proposed change. Small solar projects are beneficial to the environment because they generate electricity that might otherwise be generated by facilities that rely on the combustion of fossil fuels. Public health and welfare and thus protected. Solar generation of electricity also helps reduce our country's dependence on foreign oil and helps increase jobs and economic development related to construction and operation of these projects. In 2019, DEQ followed the Administrative Process Act (§ 2.2-4000 et seq. of the Code of Virginia), to amend the Solar PBR regulation with the goal of clarifying the requirements for applicants, operators and permitted facilities, thus improving permitting procedures while enhancing protection of natural resources and human health. Promulgation was delayed, and the amendment did not go into effect. While the solar regulation is in the regulatory development process for amendments mandated by Chapter 688, DEQ will also incorporate certain proposed provisions from the 2019 Solar PBR regulatory process.

Threatened & Endangered Insects Mitigation

DEQ proposes to expand the current definition of wildlife, by specifying that threatened and endangered (T&E) insect species would also be considered T&E wildlife. The presence of T&E insects in the disturbance zone would trigger the determination that significant adverse impacts to wildlife are likely, thus requiring mitigation. Mitigation actions may include best practices to avoid, minimize, or offset adverse impacts. The provision to include a broader T&E species analysis incorporating T&E ensures a more comprehensive protection of vital Commonwealth resources, as they are essential components of the biological diversity that sustain healthy ecosystems and play critical roles as pollinators, scavengers, and decomposers.

An estimate of the mitigation costs associated with considering insects as T&E wildlife is not currently available.

Pollinator/Bird Habitat Scorecard

DEQ proposes to require that the applicant submit a completed Virginia Pollinator-Smart scorecard with the PBR application. The agency believes it would take approximately 45 minutes for the applicant to complete the two-page scorecard. Certification would not be required, and a low score would not prompt mitigation. DEQ does not anticipate any associated costs with the requirement to complete the scorecard.

Native meadow plantings under and around solar panel areas reduce the costs of mowing and maintaining non-native grasses. Further, panel efficiency is significantly enhanced by the cooling effects of diverse meadow habitat compared to non-native grass monocultures. Native plant meadows are much better than turf grass at capturing atmospheric carbon and returning it to the soil, thus reducing a solar operation's carbon footprint. Native plants effectively minimize soil and water runoff. Providing pollinator habitat also greatly benefits surrounding agriculture by enhancing pollinator populations.

Timeframes

The agency proposes to establish several new timeframes:

- Authorization to construct and operate shall become invalid if (i) a program of continuous construction or modification is not begun within 60 months from the date the permit-by-rule or modification authorization is issued; or (ii) a program of construction or modification is discontinued for a period of 24 months or more, except for a DEQ-approved period between phases of a phased construction project. With large gaps in time between analyses and construction, conditions on the ground may have significantly changed and the analysis may no longer be accurate. If the authorization is deemed invalid, new fees and application documents must be submitted if the developer decides to pursue the project.
- DEQ proposes to change the notification requirement for a change of ownership from 30 days prior to the change to 30 days after the change of ownership. This would reduce the reporting burden for the applicant.
- Solar developers are currently required to submit postconstruction site maps, but no deadline is indicated. The lack of a deadline has hindered DEQ's ability to enforce the submission of these maps, which in turn hinders DEQ's ability to ensure the use of good practices. The agency proposes to require that the post-construction site maps be submitted within six months from the beginning of operation.

DEQ does not anticipate any associated costs with these requirements. The addition and clarification of these regulatory timelines will improve the current permitting process for applicants and permitted facilities.

Projects with Reduced Requirements

DEQ proposes to clarify that projects proposed for previously disturbed land or brownfields that do not impact more than 10 acres, regardless of megawatt capacity, must only notify DEQ and submit a certification by the governing body of the locality or localities wherein the project will be located that the project complies with all applicable land use ordinances. These projects would not be subject to any other requirements of the regulation. This approach is currently allowed but is not clearly delineated in the existing regulation.

	DEQ does not anticipate any associated costs with this change Therefore, to the extent that the availability of this approach has not been widely known, this proposed amendment may encourage development on previously disturbed land, protecting additional forest lands or prime agricultural land. DEQ proposes to increase the maximum rated capacity, under which the applicant is not required to submit any notification or certification to the department, from 500 KW to one MW. This proposed amendment was at the request of Virginia Energy during the 2019 regulatory advisory panel meetings. DEQ does not anticipate any associated costs with this change. This would moderately reduce costs for projects with capacity greater than 500 KW and less than or equal to one MW.	
(2) Present Monetized Values	Direct & Indirect Costs (a) (a) See Tables 1 and 2 above	Direct & Indirect Benefits (b) b) Fiscal estimates are indeterminate
(3) Net Monetized Benefit	NA	
(4) Other Costs & Benefits (Non- Monetized)	NA	
(5) Information Sources	Fiscal analysis statements prepared by legislature in support of HB206 promulgation and Economic Impact Analysis prepared by the VA Dept. of Planning and Budget; previously prepared regulatory development documents; industry contacts; The Economic Impact of Virginia's Agriculture and Forest Industries, Weldon Cooper Center for Public Service, University of Virginia (2021); "USDA Forest Service. 2022. Forests of Virginia, 2020. Resource Update FS-395. Asheville, NC: U.S. Department of Agriculture, Forest Service."; and 2022 Census of Agriculture, USDA, National Agricultural Statistics Service.	

Table 1b: Costs and Benefits under the Status Quo (No change to the regulation)

(1) Direct &	Direct Costs: Describe the direct costs of this proposed change here.
Indirect Costs &	
Benefits	The following direct costs are incurred when permitting a solar project with a
(Monetized)	rated capacity greater than five megawatts and a disturbance zone greater
	than 10 acres through the current PBR process:

1. Permit application fee based on project MW:

Table 3

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Type of Action	Fee
Application: >5 MW to 25 MW	\$8,000
Application: >25 MW to 50 MW	\$10,000
Application: >50 MW to 75 MW	\$12,000
Application: >75 MW to 150 MW	\$14,000

2. Survey requirements for natural and historic resources:

Table 4		
Rated	Non-Fee	Estimated Cost of
Capacity/	Requirements	Non-Fee
Disturbance		Requirements
Zone Acreage		
Greater than 5 MW and greater than 10 acres	desktop and field surveys for both wildlife and cultural resources*	\$50,000 - \$70,000

*These cost estimates include reporting, recordkeeping, and administrative costs.

3. Coastal Avian Protection Zone mitigation fee if required:

Projects located in part or in whole within zones 1, 2, 3, 4, 5, 10, 11, 12, or 14 on the Coastal Avian Protection Zones (CAPZ) map must pay a mitigation fee of \$1,000.00 per megawatt MW of rated capacity.

Indirect Costs: Describe the indirect costs of the proposed change.

Fiscal estimates are indeterminate.

Direct Benefits: Describe the direct benefits of this proposed change here.

No direct benefits would be realized by not amending the regulation in accordance with state law. Currently realized benefits would continue in the absence of amendment.

Indirect Benefits: Describe the indirect benefits of the proposed change.

	No indirect benefits would be realized by not amending the regulation in accordance with state law. Currently realized benefits would continue in the absence of amendment.	
(2) Present Monetized Values	Direct & Indirect Costs	Direct & Indirect Benefits
	(a) See Tables 3 and 4 above	(b) Fiscal estimates are indeterminate
(3) Net Monetized Benefit	NA	
(4) Other Costs & Benefits (Non- Monetized)	NA	
(5) Information Sources	Economic Impact Analysis from the VA Dept. of Planning and Budget; previously prepared regulatory development documents; industry contacts.	

Impact on Local Partners

Use this chart to describe impacts on local partners. See Part 8 of the ORM Cost Impact Analysis Guidance for additional guidance.

Table 2. Impace on	
(1) Direct &	Direct Costs: Describe the direct costs of this proposed change here.
Indirect Costs &	
Benefits	Fiscal estimates are indeterminate; however, the Solar PBR is not expected to
(Monetized)	create costs for localities, unless a locality itself chooses to develop a solar energy project, in which case the locality's costs will be similar to the costs of any other permit applicant.
	Indirect Costs: Describe the indirect costs of the proposed change.
	Fiscal estimates are indeterminate; however, there might be potential costs to
	a locality if a project is developed within its jurisdiction. These indirect costs
	could occur because of the existence of the project (with potential access or road construction issues, for example) but not because of the solar PBR
	regulation. The locality, pursuant to its land-use authority, has the power to
	determine whether or not a project can be located within its jurisdiction. A
	locality's decisions in this regard are separate from the operation of the
	regulations. DEQ only requires that the local government certify that the
	applicant has met all local land-use ordinances.
	Direct Benefits: Describe the direct benefits of this proposed change
	here.

Table 2: Impact on Local Partners

	The purpose of a Permit by Rule is to provide expedited, simplified permitting as mandated by state law; this provides a measure of regulatory relief. The small solar energy permit by rule framework eliminates uncertainty in the permitting process because the 14 criteria which much be met to receive a permit to construct and operate are set forth in §§ 10.1-1197.6 (B) of the Code of Virginia. Further, the regulation specifies that DEQ must render a decision concerning the permit application within 90 days. This significant reduction in uncertainty is in itself beneficial and will increase the likelihood that net beneficial projects will go forward. Indirect Benefits: Describe the indirect benefits of the proposed change. Generally, solar energy projects are beneficial to the environment because they generate electricity that would otherwise be generated by highly polluting fossil fuel facilities.	
(2) Present Monetized Values	Direct & Indirect Costs (a)) Fiscal estimates are indeterminate	Direct & Indirect Benefits (b)) Fiscal estimates are indeterminate
(3) Other Costs & Benefits (Non- Monetized)	NA	
(4) Assistance	NA	
(5) Information Sources	Economic Impact Analysis prepared by the VA Dept. of Planning and Budget; previously prepared regulatory development documents; locality contacts.	

Impacts on Families

Use this chart to describe impacts on families. See Part 8 of the ORM Cost Impact Analysis Guidance for additional guidance.

Table 3:	Impact on	Families
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(1) Direct &	Direct Costs: Describe the direct costs of this proposed change here.
Indirect Costs &	
Benefits	Fiscal estimates are indeterminate.
(Monetized)	
	Indirect Costs: Describe the indirect costs of the proposed change.

e. direct benefits to families are ant 1a. lirect Benefits: Describe the indi	t benefits of this proposed change icipated beyond those discussed in Table rect benefits of the proposed change. ticipated beyond those discussed in	
indirect benefits to families are an		
ect & Indirect Costs	Direct & Indirect Benefits	
Fiscal estimates are eterminate.	(b) Fiscal estimates are indeterminate.	
Δ		
Economic Impact Analysis from the VA Dept. of Planning and Budget; previously prepared regulatory development documents.		
	eterminate.	

Impacts on Small Businesses

Use this chart to describe impacts on small businesses. See Part 8 of the ORM Cost Impact Analysis Guidance for additional guidance.

Table 4: Impact on Small Businesses

(1) Direct &	Direct Costs: Describe the direct costs of this proposed change here.				
Indirect Costs &					
Benefits	Developers of utility scale solar projects could be classified as small businesses.				
(Monetized)	For developers in this category, the increased cost of mitigation as detailed in				
	Table 1a could potentially limit solar development in Virginia.				
	Indirect Costs: Describe the indirect costs of the proposed change.				
	Fiscal estimates are indeterminate.				
	Direct Benefits: Describe the direct benefits of this proposed change				
	here.				
	For any individual or company wishing to develop a solar energy project, the				
	regulation provides certain, consistent and reasonable standards for obtaining				
	a permit to construct and operate. Furthermore, the regulation mandates that				

	 DEQ process permit applications in no more than 90 days – a timeframe that should help developers in their planning and may also assist in obtaining project financing. Providing the new mitigation ratios for impacts to prime agricultural soils, forest lands and C1 and C2 ecological cores will allow the developer to determine the up-front costs of mitigation and evaluate project feasibility. Indirect Benefits: Describe the indirect benefits of the proposed change. No indirect benefits to small businesses beyond those identified in Table 1a are anticipated. 			
(2) Present Monetized Values	Direct & Indirect Costs (a) Fiscal estimates are indeterminate.	Direct & Indirect Benefits (b) Fiscal estimates are indeterminate.		
(3) Other Costs & Benefits (Non- Monetized)	NA Economic Impact Analysis prepared by the VA Dept. of Planning and Budget; previously prepared regulatory development documents; industry contacts.			
(4) Alternatives	NA-Mandated by Chapter 688.			
(5) Information Sources	Economic Impact Analysis prepared by the VA Dept. of Planning and Budget; previously prepared regulatory development documents; industry contacts.			

Changes to Number of Regulatory Requirements

Table 5: Regulatory Reduction

For each individual action, please fill out the appropriate chart to reflect any change in regulatory requirements, costs, regulatory stringency, or the overall length of any guidance documents.

VAC	Authority of	Initial	Additions	Subtractions	Total Net
Section(s)	Change	Count			Change in
Involved*					Requirements
9VAC5-	(M/A):	0	0	0	0
15-10	(D/A):	0	0	0	0
	(M/R):	0	0	0	0
	(D/R):	0	0	0	0
9VAC5-	(M/A):	0	0	0	0
15-20	(D/A):	0	0	0	0
	(M/R):	0	0	0	0
	(D/R):	0	0	0	0
9VAC5-	(M/A):	1	1	0	+1
15-30	(D/A):	6	1	0	+1
	(M/R):	0	13	0	+13
	(D/R):	19	0	0	0
9VAC5-	(M/A):	0	0	0	0
15-40	(D/A):	0	0	0	0
	(M/R):	9	12	0	+12
	(D/R):	0	2	0	+2
9VAC5-	(M/A):	2	3	0	+3
15-50	(D/A):	0	0	0	0
	(M/R):	0	0	0	0
	(D/R):	0	0	0	0
9VAC5-	(M/A):	0	2	0	+2
15-60	(D/A):	0	0	0	0
	(M/R):	7	27	0	+27
	(D/R):	0	2	0	+2
9VAC5-	(M/A):	0	0	0	0
15-70	(D/A):	0	0	0	0
	(M/R):	5	6	0	+6
	(D/R):	0	0	0	0
9VAC5-	(M/A):	0	0	0	0
15-80	(D/A):	0	0	0	0
	(M/R):	1	1	0	+1
	(D/R):	0	0	0	0
9VAC5-	(M/A):	1	0	0	0
15-90	(D/A):	0	0	0	0
	(M/R):	8	1	0	+1

Change in Regulatory Requirements

VAC	Authority of	Initial	Additions	Subtractions	Total Net
Section(s)	Change	Count			Change in
Involved*	C				Requirements
	(D/R):	0	0	0	0
9VAC5-	(M/A):	0	0	0	0
15-100	(D/A):	4	1	0	+1
	(M/R):	0	8	0	+8
	(D/R):	1	4	0	+4
9VAC5-	(M/A):	0	0	0	0
15-110	(D/A):	3	3	0	+3
	(M/R):	0	8	0	+8
	(D/R):	2	0	0	0
9VAC5-	(M/A):	0	0	0	0
15-120	(D/A):	0	0	0	0
	(M/R):	0	0	0	0
	(D/R):	0	0	0	0
9VAC5-	(M/A):	0	0	0	0
15-130	(D/A):	0	0	0	0
	(M/R):	0	0	0	0
	(D/R):	0	0	0	0
9VAC5-	(M/A):	0	0	0	0
15-140	(D/A):	0	4	0	+4
	(M/R):	0	0	0	0
	(D/R):	0	0	0	0
				Grand Total of	(M/A): +6
				Changes in	(D/A): +9
				Requirements	(M/R): +76
					(D/R): +8

Key:

Please use the following coding if change is mandatory or discretionary and whether it affects externally regulated parties or only the agency itself:

(M/A): Mandatory requirements mandated by federal and/or state statute affecting the agency itself

(D/A): Discretionary requirements affecting agency itself

(M/R): Mandatory requirements mandated by federal and/or state statute affecting external parties, including other agencies

(D/R): Discretionary requirements affecting external parties, including other agencies

VAC Section(s) Involved*	Description of Regulatory Requirement	Initial Cost	New Cost	Overall Cost Savings/Increases
9VAC15-60- 40 D	Preconstruction mapping of prime	NA	Will vary on a case-by-	See Table 1a.
	agricultural soils		case basis.	

Cost Reductions or Increases (if applicable)

VAC Section(s)	Description of Regulatory	Initial Cost	New Cost	Overall Cost Savings/Increases
Involved*	Requirement			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
9VAC15-60-	Preconstruction	NA	Will vary on	See Table 1a.
40 E	mapping of forest land		a case-by-	
			case basis.	
9VAC15-60-	Mitigation/conservation	NA	Will vary on	See Table 1a.
60 D, E, F, G	easements		a case-by-	
			case basis.	

Other Decreases or Increases in Regulatory Stringency (if applicable)

VAC Section(s) Involved*	Description of Regulatory Change	Overview of How It Reduces or Increases Regulatory Burden
N/A		

Length of Guidance Documents (only applicable if guidance document is being revised)

Title of Guidance Document	Original Word Count	New Word Count	Net Change in Word Count
N/A			

*If the agency is modifying a guidance document that has regulatory requirements, it should report any change in requirements in the appropriate chart(s).