"Solar REITs": A New Tax Paradigm for Renewable Energy Financing

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I. INTRODUCTION

The demand for renewable energy has never been higher. The overwhelming consensus is that human atmospheric contributions related to energy generation are a large driver of climate change, causing public desire, state policy, and federal incentives to move strongly toward sustainable energy, of which solar is a key component.\(^1\) At the same time, though, the renewable energy market still lacks the fundamental economic requirement of cost competitiveness needed to effect large-scale adoption. Because solar energy projects are capital-intensive (requiring an estimated $7 billion annually\(^2\)), low cost of capital is instrumental to this competitiveness. Thus, the need for effective, reliable incentivizes for solar energy investment appears to be more acute than ever.

Historically, renewable energy investors have relied on the investment tax credit (ITC) and the production tax credit (PTC), but the reliability and predictability of these incentives has been volatile. The PTC approached expiration at the end of 2012 and is doing so again in 2013. These credits are typically saved only by last-minute legislation that temporarily extends the credit for another year, effectively killing many wind projects. The ITC for large wind projects will be entirely eliminated on January 1, 2014. Solar, small wind, or other section 48 property\(^3\) will only receive a 30% tax credit if placed in service before 2017, and on January 1, 2017 the solar ITC will decrease from 30% of eligible project costs to 10%, significantly diminishing its attractiveness to investors. Even if lobbying efforts aimed at extending these incentives wins the

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\(^1\) See, e.g., Dep’t of Energy SunShot goals of 14% of the nation’s total electricity production and $250 billion of solar by 2030 (DOE 2012) (available at http://www1.eere.energy.gov/solar/sunshot/index.html) (last checked Nov. 16, 2013).


\(^3\) See 26 U.S.C. § 48 (outlining available energy credits for qualifying property).
uphill battle amidst the current political climate of austerity, the result will likely be merely another short-term, tentative extension to be revisited in a year’s time, once again seriously undermining the reliability and predictability needed to attract a critical mass of investment capital to solar energy projects.

A further downside of tax credit incentive mechanisms has been that they require investors with sufficient tax liability. Tax credits operate by reducing income tax liability, but most developers of renewable energy projects do not have enough income tax liability to fully use the credits. As a result, developers need to “monetize” the credits, usually though the use of tax equity investors. These investors provide capital, and in exchange, are allocated much of the credits from the project to satisfy their own outside tax liabilities.

Unfortunately, the pool of investors that have sufficient tax liability during the monetization period is limited. The tax equity market’s small participant pool also contributes to the lack of a viable secondary market for interests in renewable projects. And as the 2008 financial crisis demonstrated, such tax appetite can also be fleeting and vulnerable to economic volatility, and thereby limiting not just the investor pool, but the amount of income tax liability they have to offset. Importantly, tax equity investors also demand a risk premium because they are usually committing capital for at least five years, significantly raising cost of capital for a solar project. The combination of these factors makes tax equity financing an expensive way form capital, allowing tax equity investors to charge developers a premium for the use of their equity, and thus has been injurious to the renewable energy project financing. In short, because of the need to rely on tax equity investment, the cost of capital to finance these projects is high, disincentivizing investment and reducing overall solar project development.
Regrettably, current financing methods and administrative programs have been inadequate to produce the necessary and sufficient market conditions to meet this demand. Even specific government programs targeted at spurring mass solar development—like BLM’s recent Solar Energy Zone development auction which, despite eased environmental study costs and streamlined permitting, failed to receive even a single bid during its first competitive auction\(^4\)—still do not appear to provide adequate long-term certainty about regulations, tax breaks, and other financial variables that impact a solar project’s bottom line. As a result, developers have been seeking new (or rethinking old) sources of project financing.

One key to accessing lower cost capital—which in turn will help fill ever-increasing demand for renewable energy—is to move away from reliance on tax credits and tax equity financing models and attract a broader investor pool. Real estate investment trusts (REITs) have historically been a proven, effective capital-raising vehicle for various capital-intensive projects, such as buildings, transmission lines, and communication towers. Essentially, REITs are financial vehicles that allow a broad range of investors to pool their capital and capitalize on the tax benefits of real estate asset ownership, roughly analogous to mutual funds focusing on real estate investments.\(^5\) At least partially for these reasons, the current REIT market is robust, consisting of about 172 registered REITs with a combined market value of over $600 billion, dividends of around $29 billion, and an average return of 28% in 2012.\(^6\)

The REIT financing mechanism delivers the valuable benefits of eliminating entity level taxation, and an exit strategy for initial investors due to the liquidity of their REIT interest (i.e.


cash out via sale of their interest to secondary investors). A further important benefit of REITs is that they provide a risk-spreading mechanism through ownership of a portfolio composed of diversified assets. All of this presents a lower risk profile, which can still attract sufficient investment despite yielding a lower rate of return, ultimately resulting a lower cost of capital for the developer. This attractive combination of single-level taxation, predictable income streams, liquidity, and lower cost of capital aligns perfectly with capital-intensive solar energy projects seeking precisely this lower-cost financing mechanism.

Unfortunately, however, the REIT structure has been unavailable to solar project developers under the tax code. Though there are many PLRs and revenue rulings suggesting that solar PV assets are excluded from the “real property” definition and instead classified as “assets accessory to the operation of a business,” their status of solar PV assets under the tax code remains uncertain. If the IRS were to re-classify PV as “real” property instead of “personal” property, it is likely have fundamental implications for large-scale solar project financing. Just as traditional REITs acquire building and other income-generating assets, so too could this new type of entity—a “Solar REIT”—own and operate income-generating solar assets.

This paper advances two main arguments. First, although REIT rulings strongly suggest that the IRS would classify solar PV as “assets accessory to the operation of a business,” they are not necessary findings: current concepts and rulings can, with some minor modifications and permissible alternative analyses, accommodate solar assets as REIT-qualifying “real property.” Second, alternatively, if the current REIT regime does bar the inclusion of solar assets, the IRS, the Treasury Department, or Congress should make this proposed change: it will not require any substantive upending of current tax law, and the practical benefits to the solar development community would be enormous.
Section II discusses the origin and development of REITs, and the current state of REIT law. Section III examines REIT jurisprudence found in IRS general counsel memoranda (GCMs), private letter ruling (PLR), and revenue ruling treatments to draw out the key analyses underlying the “real property” versus “assets accessory to the operation of a business” distinction at the heart REIT-qualification. Section IV concludes the paper with an in-depth argument regarding why “Solar REITs” under current tax law should be allowed to form around the ownership of solar PV assets.

II. REIT Law

The REIT concept was enacted in 1960 legislation designed to give real estate investors some of the same preferential tax treatment enjoyed by securities investors. First, entities satisfying certain asset, structure, operational, and distribution requirements would avoid corporate level taxation. The legislation levied taxes only on distributed earnings, which was intended to give investors “essentially the same tax treatment as they would have received if they had invested directly in” the underlying assets. One intended benefit was to extend to small investors the advantages of resource pooling that were normally available only to larger entities with greater resources. Congress also intended to increase the competitiveness of real estate by removing taxation disincentives for real estate equities vis-à-vis other securities.

A. The Evolution of REITs: the 1986 and 1999 REIT Amendments

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8 Id.
9 Id.
10 Id. at 821 (“as a factor in determining the relative size of investments in stocks and securities on the one hand and real estate equities and mortgages on the other.”).
11 In an interesting parallel to the present renewable energy milieu, Congress specifically noted “the shortage of private capital…for individual homes, apartment houses, office buildings, factories, and hotels,” If one were to simply substitute “electrical generation assets from renewable sources” (or some analog),” the result would be a striking analog to the current situation facing renewable energy projects.
A major increase in the popularity of REITs occurred following the Tax Reform Act of 1986.\footnote{12} Prior to these amendments, partnerships enjoyed the ability to generate tax losses for their investors, but the revised tax law significantly reduced this benefit.\footnote{13} Another attractive change was the elimination of accelerated depreciation methods, which had previously caused many investors to focus on income-oriented investments.\footnote{14} These amendments combined to eliminate the entity’s ability to claim paper losses and their associated tax shelters.\footnote{15} Finally, the 1986 amendments relaxed earlier qualification tests applicable to REITs under the original 1960 legislation.\footnote{16} Most importantly, prior to 1986 REITs were not permitted to manage their own properties, but they have since been permitted to actively operate their own income-producing properties as self-managed entities by virtue of these amendments.\footnote{17}

The 1999 Taxpayer Refund and Relief Act\footnote{18} made additional key changes to the law governing REITs. Among other things, the 1999 amendments lowered gross income distribution requirements from 95% to 90%, and relaxed restrictions on REITs’ ability to perform “non-customary” tenant services (thus avoiding “bad income” from those activities).\footnote{19}

B. Overview of Current REIT Law

To qualify as a REIT under applicable IRS rules, an entity must satisfy a variety of organizational, distribution, income, and asset requirements. One definitional requirement to

\footnotesize\begin{itemize}
\item 13 Jack H. McCall, \textit{A Primer on Real Estate Trusts: The Legal Basics of REITs}, 2 TENN. J. BUS. L. 1, 2 (Spring 2001).
\item 14 Schiller, “Real Estate Finance & Its Vulnerability to Crisis,” \textit{supra} n.12.
\item 15 McCall at 2, \textit{supra} n.13.
\item 16 Id.
\item 19 McCall at 6, \textit{supra} n.13.
\end{itemize}
qualify for REIT status is that the entity must be owned by at least 100 persons during at least 335 days of a taxable year. The entity must also distribute at least 90% of its income to investors, derive the majority of its income from passive sources, and own primarily real estate assets. If these criteria are met, the entity is entitled to deduct the income distributions from its taxable income. Any undistributed income above the 90% requirement is subject to the applicable corporate rate—if 100% of the gross income is distributed, the entity is essentially tax-exempt. In either scenario, tax treatment under a REIT greatly reduces tax liability and provides a rate of return that becomes much more competitive with other potential uses of investment capital.

Generally, these Section 856 ownership and organizational requirements will not present much difficulty for REITs that wish to invest in renewable energy assets. Much more problematic, however, are the income test and the asset test, particularly the question regarding what constitutes a “real estate asset” for the purposes of these tests. This section will begin by examining the income test, the asset test, and the potentially implications of each for forming a solar REIT.

1. Income Test

To qualify as a REIT under the tax code, an entity must meet two annual income requirements. First, for any taxable year, a REIT must derive at least 95% of its gross income for the taxable year from approved sources (including dividends, interest and rents from real property). Of this, 75% or more of its gross income must come from “rents” from real

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22 26 U.S.C. § 856(c)(2)-(3).
property, mortgage interest, and other specified real estate-source income.\textsuperscript{26} “Rents” from real property is itself a term of art, and by statute includes rents from interests in real property, of which up to 15% may come from “personal property” related to the lease.\textsuperscript{27} In the case of a “solar REIT,” this requirement alone in principle should not present much of an obstacle, since the REIT can (and, as argued in the “assets accessory” discussion, probably \textit{must}) simply lease the PV assets to an entity that would then sell the generation under a power purchase agreement (PPA).

2. \textit{Asset Test}

REIT asset requirements appear to be more problematic for the “solar REIT” concept. A REIT must satisfy six asset-related requirements at the close of each quarter of the taxable year, the most significant from a renewable energy project’s perspective being the requirement that at least 75 percent of the value of the REIT’s total assets must consist of real estate assets, cash and cash items, and government securities.\textsuperscript{28} As noted above, to be considered a REIT, at least 75% of an entity’s assets must consist of “real property.”\textsuperscript{29}

3. \textit{“Real Estate Assets”}

The questions raised by the income and asset tests are whether rents from a lease\textsuperscript{30} of renewable energy property like solar PV qualifies as “rents from real property” for purposes of

\textsuperscript{26} 26 U.S.C. § 856(c)(3).
\textsuperscript{27} 26 U.S.C. § 856(d)(1).
\textsuperscript{28} 26 U.S.C. § 856(c)(4)(A).
\textsuperscript{29} More specifically, 26 U.S.C. § 856(c)(4) requires REIT assets to consist of the following at the close of each quarter of the taxable year: at least 75% cash and cash items (including receivables), US government securities, and real estate assets; no more than 25% securities (other than securities in the 75%); no more than 25% securities of one or more taxable REIT subsidiaries (TRS); no more than 5% of securities of any single issuer (except for those in the 75% test and TRS); and no more than 10% of the total value of the outstanding securities can derive from any single issuer.
\textsuperscript{30} Unless otherwise indicated, “lease” in this paper will always refer to a “triple-net” lease. This is the most common and applicable form of lease agreement for REITs, whereby the lessee agrees to pay all three “nets” of property taxes, building insurance, and maintenance in addition to rent. As will become apparent later in the discussion, a triple-net lease arrangement will be the best way a REIT can satisfy the requirement that it be operationally removed from the qualifying PV assets.
the income test, and whether renewable energy property qualifies as a “real estate asset” for purposes of the asset test.

The tax code defines the term “real estate assets” as including “real property,” but leaves this operative term of the provision undefined. Real property includes “inherently permanent structures” and does not include “assets accessory to the operation of a business,” even if counted as fixtures under local law. In determining whether a component of a solar project is a real estate asset, therefore, at least two fundamental questions must be considered: is the asset an inherently permanent structure, and is it “accessory to the operation of a business”?

Consequently, for an entity owning solar energy project interests to satisfy the income and asset tests, the project’s assets must consist largely of land and improvements to the land (such as buildings, inherently permanent structures, structural components of buildings and inherently permanent structures), that are not “assets accessory to the operation of a business,” and that generate rental income within the meaning of “rents” under the tax code. Such changes are often difficult, but as this paper argues, a legal justification is available under the current code, and irrespective, the IRS, the Treasury Department, or Congress can and should make this easy conceptual change.

C. “Real Property”

31 26 U.S.C. § 856(c)(5)(B); 26 C.F.R. 1.856-3(d) (“The term ‘real property’ means land or improvements thereon, such as buildings or other inherently permanent structures thereon (including, items which are structural components of such buildings or structures). In addition, the term ‘real property’ includes interests in real property…The term includes, for example, the wiring in a building, plumbing systems, central heating or central air-conditioning machinery, pipes or ducts, elevators or escalators installed in the building, or other items which are structural components of a building or other permanent structure. The term does not include assets accessory to the operation of a business, such as machinery, printing press, transportation equipment which is not a structural component of the building, office equipment, refrigerators, individual air conditioning units, grocery counters, furnishings of a motel, hotel, or office building, etc., even though such items may be termed fixtures under local law.”) (emphasis added).
32 26 C.F.R. 1.856-3(d).
To be classified as “real property” within the current REIT framework, assets must possess the following: *permanence, passivity, and integration*.

1. **Inherent Permanence Requirement**

Central to the definition of “real property” in the federal tax code is *inherent permanence*. IRS regulations provides that “real property” includes “land or improvements thereon, such as buildings or other inherently permanent structures thereon (including items which are structural components of such buildings or structures).”

The IRS has largely relied upon a “movability” inquiry to determine whether property qualifies as an improvement to land within the meaning of regulation 1.856-3(d). In analyzing communication towers as real property, for example, the IRS noted that they were not “easily movable” once erected. The next section examines these and other rulings in greater detail and establishes that a central feature of IRS analyses into what constitutes real property relies on the actual and intended movability of the asset.

The movability schema was later expanded when a six-factor test for determining movability was incorporated into the REIT analysis by the tax court in *Whiteco Industries Inc. v. Commissioner*. In treating the question of whether the extent of movability of outdoor advertising signs rendered them ineligible for an investment tax credit, the *Whiteco* court first considered whether the property was capable of being moved, and whether it in fact had been moved. Second, the court analyzed whether the property was designed or constructed to remain

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33 26 C.F.R. 1.856-3(d).
34 General Counsel Memorandum 32907 (Sept. 3, 1964). In a similar rationale, the IRS has also observed that mobile homes affixed to the ground with six or more steel straps were not “readily movable by the owner.” PLR 7006239710A (June 23, 1970).
35 It is important to note that, per 26 U.S.C. § 6110(k)(3), private letter rulings are binding only as between IRS and the taxpayer who requested the ruling, and have no precedential effect in other cases. However, private letter rulings are useful in providing insight into how IRS would resolve an issue discussed in a ruling.
36 65 T.C. 664 (1975).
permanently in place. Relatedly, the court inquired into the circumstances to determine the expected or intended length of affixation. The fourth and fifth factors involved assessing how time-consuming and substantial removal of the property would be, and how much damage the property would sustain? Lastly, the manner of affixation of the property to the land was considered by the Whiteco court.\(^ {37} \) Guided by an application of these factors and findings that the signs were not expected to last indefinitely, would need to be moved in a relatively short period of time, and could be relatively easily moved, the court held that the signs were not inherently permanent.\(^ {38} \)

2. The “Assets Accessory to the Operation of a Business” Exception to the “Real Property” Definition

A key exception to the “real property” definition exists for what the IRS has termed “assets accessory to the operation of a business.” Though the regulation provides examples of property that is “accessory to the operation of a business,” there is no clear explanation for the purpose of this language.\(^ {39} \)

An early GCM addressing the “real property” status of certain railroad property may provide some insight as to the purpose of the “assets accessory” language. GCM 33996 explains that the exclusion of “assets accessory to the operation of a business” from real property in 1.856-3(d) was derived from language in 1960 regulations under former I.R.C. Section 179. Former Section 1.179-3(a) defined “section 179 property” as certain items of “tangible personal property,” and Section 1.179-3(b) defined “tangible personal property” as any tangible property (except land or improvements), such as buildings and other inherently permanent structures.

\(^ {37} \) Whiteco, 65 T.C. at 672. See also Rev. Rul. 80-151, 1980-1 C.B. 7.
\(^ {38} \) Whiteco, 65 T.C. at 673.
including “assets accessory to the operation of a business, such as machinery, printing presses, transportation or office equipment, refrigerators, individual air conditioning units, grocery counters, etc….even though such assets may be termed fixtures under local law.”

This regulation provided an additional first-year depreciation allowance for small businesses on Section 179 property. GCM 33996 further states that the Section 1.856-3(d) language was intended to serve a similar but opposite purpose, to exclude items of property that were in the nature of machinery or equipment from the “real property” definition even though they are considered fixtures under local law. Thus, it appears that the “assets accessory” language was included in the tangible personal property definition to ensure that property otherwise eligible for this Section 179 depreciation was not excluded because it was treated as a fixture (i.e., as real property) under local law.

It makes good sense to view the “assets accessory” language as growing out of a distinction between active business and passive investment. When Congress enacted REIT legislation, it sought to limit conduit tax advantages to “passive” real-estate investment, fearing that corporations engaged in active businesses would try to use REIT provisions as a corporate level tax loophole. This seems to have played an animating role in the development of REIT requirements, with the original REIT legislation sponsor characterizing the measures as an extension of the conduit tax treatment already given to mutual funds and regulated investment companies. Given that the “essence” of the mutual fund is that it “be engaged in merely a

41 GCM 33996 (Dec. 12, 1968).
42 Id.
44 See, e.g., 106 Cong. Rec. 15,018 (1960) (statement of Rep. Keogh) (“The primary reasons for this legislation are, first, to remedy an inequity in existing law, by extending to real estate investment trusts . . . the same tax treatment that has been extended since 1936 to the mutual funds . . .”); Theodore S. Lynn, Harry F. Goldberg, & Robert H. Steinfeld, Real Estate Investment Trusts 2048, 1018 (1987) (“The development of the regulated investment
passive investment activity and not in the active conduct of a trade or business;” it was expected that the same should be true for REITs. Both House and Senate committee reports confirm this expectation.

Even with this explanation of the origin of the “assets accessory to” language in Section 1.856-3(d), it still raises more questions than it answers. For example, what does it mean for an asset to be “accessory to” a business? The answer can probably best be seen through an examination of REIT jurisprudence.

3. REIT Jurisprudence

Besides inherent permanence, two additional fundamental requirements for REIT qualification are readily evident and best parsed by examining REIT jurisprudence: passivity, and integration. General counsel memoranda (GCMs), private letter rulings (PLRs), and revenue rulings provide insight regarding how the IRS has refined and evolved its interpretation of “real property” over the years through application of REIT law to broad range of factual

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company (‘RIC’ statute is inextricably tied with the history of REITs. There is little dispute that there would not have been any REIT legislation without the precedent of legislation for RICs.”). Harvard Law Review Association, Managing the Real-Estate Investment Trust: An Alternative to the Independent Contractor Requirement, 107 HARV. L. REV. 1117, 1126 (Mar. 1994).


46 H.R.Rep. No. 2020, 86th Cong., 2d Sess. 202 (1960) (“[Y]our committee has also taken care to draw a sharp line between passive investments and the active operation of business, and has extended the regulated investment company type of tax treatment only to income from the passive investments of real estate investment trusts. Your committee believes that any real estate trust engaging in active business operations should continue to be subject to the corporate tax in the same manner as is true in the case of similar operations carried on by other comparable enterprises.”). See also 106 Cong.Rec. 15,017-18 (1960) (statements of Rep. Mills, Rep. Byrnes, and Rep. Keogh).

47 S. Rep. No. 313, 99th Cong., 2d Sess. 775 (1986) (“When Congress proposed to loosen the IK requirements by incorporating the UBTI standards of section 512(b)(3), it did so cautiously, noting that, although the former law may have been “overly restrictive,” the IK requirement should only be liberalized in a manner “consistent with maintaining the essential passivity of the REIT.”

48 General Counsel Memoranda are documents prepared by the Office of the Chief Counsel that “contain the reasons behind the adoption of revenue rulings, private letter rulings, and technical advice memoranda” and have “important precedential value in determining future tax questions.” Taxation With Representation Fund v. IRS, 485 F.Supp. 263, 266 (D.D.C. 1980). Essentially, GCMs are internal agency legal memoranda prepared in response to a formal request from the IRS in connection with the review of a proposed private letter, revenue, or other ruling to be issued by IRS. The chief counsel is the chief law officer for IRS. See 26 U.S.C. § 7803(b).
situations. One clear evolution is the steady expansion of the types of property that qualify as real property for REIT purposes. Applying the *Whiteco* test and a variety of other factors and considerations, the IRS has held a diverse group of assets to constitute “real property,” such as communication towers, fencing, permanently installed backup generators, timber, natural gas pipelines, and data centers.\(^\text{49}\)

Though the application and explication has not always been consistent or even coherent, we will see some general themes emerge from these treatments with which we can then examine the legal availability of a “Solar REIT” entity.

**a. Mobile homes.**

One of the earliest types of property subjected to the “real property” analysis was manufactured housing. The degree to which the structures were “inherently permanent” was the touchstone, and the analysis centered on “movability” both now and *intended* movability in the future.\(^\text{50}\) Ultimately, the court found both actual permanence and *intended permanence* because the wheels and axles were removed from the unit and the unit was affixed to the ground by six or more steel straps. Accordingly, the court held the structures to be “inherently permanent” and thus real estate assets.\(^\text{51}\)

The *Whiteco* six-factor test has also been consistently employed in finding that mobile homes were inherently permanent structures.\(^\text{52}\) Both *inherent movability* and *intended movability*
are both major factors of concern for the IRS, and both of these counsel strongly toward inclusion of solar PV in the “real property” definition.

b. Communication towers.

To qualify as “real property” under the tax code, it is not enough for assets to simply be inherently permanent—they must also not be “assets accessory to the operation of a business.” The early communication tower rulings attempt to make and explain this distinction between property that is inherently permanent and property that is “accessory.” In considering whether a television broadcast tower and related equipment (such as an elevator, transmission lines, guy wire footings, microwave equipment, and studio equipment) were “real property,” the IRS definitively categorized only the tower and its elevator, concluding they were real property, citing a lack of adequate information to make a determination regarding the related assets. 53

c. Railroad property.

With scant analysis or discussion, the IRS has held that railroad-related trackage, roadbed, buildings, bridges, and tunnels are inherently permanent and therefore real property. 54 In association with this ruling, the IRS reiterated that the purpose of excluding “assets accessory” from the real property definition was to ensure that machinery or equipment considered to be

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53 GCM 32907 (Sept. 3, 1964). When these issues were revisited ten years later, an early draft of the ruling initially concluded that various assets used to transmit microwave signals—including transmitting and receiving towers, antennae and waveguides permanently affixed to the towers, related equipment in a nearby building, and, most notably for our purposes, prewired modular racks bolted to the floor and ceiling to hold the related equipment—were “assets accessory.” See GCM 36052 (Oct. 9, 1974). However, when others within the agency were asked to review this position, they concluded that the towers, antennae, and waveguides were inherently permanent, with the notable and unfortunate exclusion of the pre-wired modular racks. GCM 36052 (Oct. 9, 1974). Ultimately, the IRS held that “real estate assets” under § 856(c)(6)(B) includes the building, heating and air conditioning system, transmitting and receiving towers, and the chain link fencing but excludes antennae, waveguides, transmitting, receiving, and multiplex equipment, and the prewired modular racks as “assets accessory.” Rev. Rul. 75-424, 1975-2 C.B. 269. See also Memorandum to Lawrence B. Gibbs, assistant commissioner (Technical), from Richard B. Treanor, chief, Branch No. 4, Interpretative Division (on behalf of Meade Whitaker, chief counsel) (attached to GCM 36052) (June 20, 1975).

fixtures under local law were not swept into the definition of “land or improvements thereon.” Because these components of the railroad properties under analysis were neither “fixtures” nor machinery or equipment, they were found to be real property within the definition of regulation 1.856-3(d).

**d. Large billboards and signs.**

Large billboards and signs have been held to be real estate assets because they were designed and constructed to remain permanently in place. The contexts in which this has been analyzed are varied: in some instances the billboards were attached to building roofs or walls, and in others they were freestanding tower billboards constructed on concrete foundations. In one specific ruling, the IRS considered whether steel billboards owned by a REIT were inherently permanent structures. Again applying the Whiteco six-factor test, the IRS has concluded that REIT-owned steel billboards (some potentially hosting electric signs owned by another entity) were inherently permanent structures and not “assets accessory.”

Similarly, the IRS considered a few months later whether REIT-owned sign superstructures—welded steel frames bolted to the building façade—and advertiser-owned large superstructure-mounted LED signs were inherently permanent structures. Under the Whiteco standard, all were found to constitute inherently permanent structures, relying on the fact that the superstructures were designed to remain permanently in place, there was no plan to remove any

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55 GCM 33996 (Dec. 12, 1968).
56 PLR 201143011 (July 19, 2011)
57 PLR 201143011 (July 19, 2011)
58 Id. (“The Steel Billboard Structures are substantial structures that are part of the building structures, or separately constructed structures...and are designed and constructed to remain permanently in place. The Steel Billboard Structures [are typically several stories high]...Each of the structures and structural components has never been moved. Because the construction and permanency of the Steel Billboard Structures are substantially comparable to the transmitting and receiving towers in Rev. Rul. 75-424 and the mobile home units in Rev. Rul. 71-220, they are inherently permanent structures.”).
superstructure, that such removal would be costly and time-consuming.\footnote{PLR 201204006 (Oct. 24, 2011).} Though rarely said directly, IRS reliance on system or structure design is further evidence that “intended permanence” is important to the real property element.

e. Timber.

Somewhat counterintuitively, the issue of whether standing timber qualifies as real property has been a difficult issue. Early on, the IRS conceded that there are important similarities between standing timber and real estate, but it was reluctant to conclude as much due to the potential that timber-bearing lands might run afoul of prohibition against REIT ownership of property held for sale to customers in the ordinary course of a trade or business.\footnote{GCM 33033 (June 23, 1965). The crux of the concern was that “[t]imber is a raw material which is usually destined ultimately for commercial processing and consumption, and as such is much more likely to be held for sale to customers in the ordinary course of business than the real estate enumerated in the Committee Reports.” The IRS then concluded they lacked adequate facts and information to reach a reliable decision on the status of the trust that owned the timber-bearing land.} The IRS revisited the issue of whether timber qualifies as real property in 1988, ruling that timberlands qualify as a real estate asset within the meaning of Section 856(c)(5)(B) by simply stating “[t]he long-established rule that standing timber is classified as realty.”\footnote{PLR 8838016 (June 21, 1988). See also PLR 200052021 (Dec. 29, 2000).}

At least in the case of timber, the production (growth) of a saleable commodity (timber) from the real estate appears to pass muster under Section 856. The implications of this timber ruling will be discussed with more depth in a later section, but for the moment we can note that it is difficult to see why the production (generation) of a saleable commodity (electrons) from permanent, non-moveable real property (e.g. solar PV arrays) would not provide a compelling analog.

f. Electric power transmission systems.
Thus far we have examined IRS treatments of fairly non-analogous assets such as mobile homes, communication towers, railroad property, billboards, and timber: none of these assets involves an integrated, non-natural solid-state system that produces valuable commodity. As the timber ruling demonstrated, the underlying asset producing a saleable commodity need not necessarily result in the exclusion of the asset. Other, more analogous rulings speak much more directly to whether REITs can and should be allowed to own solar PV assets under the tax code.

Rulings on electric transmission systems describe them as “a system of physically connected and functionally interdependent assets that serve as a conduit to allow [electricity] created by a generation source to flow through the system to end users.”\textsuperscript{63} In 2007, a REIT sought a private letter ruling regarding whether an electric transmission system qualified as real property instead of “assets accessory.”\textsuperscript{64} In the context of discussing the railroad\textsuperscript{65} and communication tower rulings\textsuperscript{66}, the IRS highlighted the physical and functional interdependence of the system components in its “movability” assessment, concluding that the system design made moving it “not feasible.”\textsuperscript{67} However, the IRS went even further and directly likened tracks and other railroad components to the electrical power transmission system at issue, characterizing both systems as passive conduits allowing electricity created by a generation source to flow through the system to end-users.\textsuperscript{68} The IRS also limited its holding in an

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\textsuperscript{63} See, e.g., PLR 200725015 (Mar. 13, 2007).
\textsuperscript{64} The REIT planned on leasing it to an unrelated entity for operation, and receive rents in return. As we will often encounter, this system lease was “triple net,” with the lessee paying all real estate taxes, building insurance, and maintenance on the property in addition to rent.
\textsuperscript{65} Rev. Rul. 69-94, 1969-1 C.B. 189 (trackage, roadbed, buildings, bridges, and tunnels of a railroad were real property).
\textsuperscript{66} Rev. Rul. 75-424, 1975-2 C.B. 269 (communications towers, a building, a heating, ventilation, and air conditioning system, and a chain link fence were real property while antennae, waveguides, transmitting and receiving equipment, and storage racks were assets accessory to the operation of a business).
\textsuperscript{67} PLR 200725015 (Mar. 13, 2007).
\textsuperscript{68} PLR 200725015 (Mar. 13, 2007).
\end{flushleft}
important way as well, noting that the electrical transmission system under review does not itself include any machinery or equipment that creates or generates [electricity].”

Crucially, the IRS relied on the communications tower analysis in Rev. Rul. 75-424 to also distinguish between the passive components that make up the electrical transmission system and the active machinery that generates the electricity conducted through the system. Based on these observations, the IRS concluded that “the System is an inherently permanent structure that is not an accessory to the operation of a business.”

From this ruling alone, it is unclear what the IRS would conclude about solar PV systems, which are comprised of elements of both of these holdings: they do not include any active machinery or equipment, yet at the same time the passive elements themselves do generate electricity. Nevertheless, this ruling has potentially enormous significance for the formation of solar REITs. First, it directly addresses energy related assets and holds that to the extent a system consists of physically connected and functionally interdependent assets, serving as a passive conduit to allow energy created by a generation source to flow through the system to end users, it is “inherently permanent” and therefore a qualifying real estate asset. This almost perfectly describes a solar PV system. Further, it is important to note the conceptual continuity between earlier rulings on substantially different assets, and how those criteria of movability and “inherent permanence” carry through to be applied to a novel situation, which is precisely what solar REITs present.

69 PLR 200725015 (Mar. 13, 2007).
70 PLR 200725015 (Mar. 13, 2007).
71 The IRS also found it significant that the REIT would not operate the system but rather lease it to a third party under a triple net lease. Although a REIT may perform certain self-management activities with respect to properties it owns, such as leasing and arranging repairs, income earned directly or indirectly from managing or operating real property is an impermissible tenant service under Section 856(d)(7). Anything more than a de minimis amount of impermissible tenant services income will taint all income from the rental of the property, so the operational passivity of the prospective solar REIT will be an important requirement.
g. **Total energy systems.**

A total energy system is a self-contained facility which produces the electricity, steam or hot water, or refrigeration needs of a building. These systems may be permanently installed inside the building, attached to it, or housed in a nearby separate structure. Predictably, the IRS has ruled that certain total energy systems qualify as real property under 1.856-3(d) if they are structural components of the building or of an inherently permanent structure to which the component is functionally related, or the mortgage covers both the total energy system and the building. Even where a total energy system is large enough to facilitate the technology business of unrelated tenants, so long as the total energy system is a structural component of a building that is itself real property, the system is as well and is not merely an “asset accessory.”

The absence of any analysis of a valuable commodity being produced for end users is unsatisfying, but it is still considerable that attached equipment which produces actual electricity for the benefit of end users qualifies as real property. This again is a compellingly analogous description of solar PV assets that a REIT would seek to own.

h. **Gas pipelines.**

IRS pipeline determinations are also important to the argument that REITs should be allowed to form around the ownership of solar assets. Similar to the transmission system

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72 PLR 201323016 (July 30, 2012).

73 See Rev. Rul. 73-425, 1973-2 C.B. 222 (“a structural component is not considered real property for this purpose unless the interest held therein is included with an interest held in the building or inherently permanent structure to which the structural component is functionally related.”) (emphasis in original).

74 See PLR 201323016 (July 30, 2012) (mortgage secured by a building and total energy system is a real estate asset regardless of whether the system is housed in a separate structure because the interest in a structural component is included with an interest held in the building or inherently permanent structure to which the structural component is functionally related); PLR 201314002 (Oct. 9, 2012) (power system structural components are real property and constitute real estate assets for purposes of sections 856(c)(4)(A) and 856(c)(5)(B)); PLR 201037005 (June 14, 2010) (electrical power components are inherently permanent structures and qualify as real estate assets under 856).
ruling, the current state of tax law is that gas pipelines are inherently permanent structures. The description of pipelines is telling, focusing on the degree of functional interdependence amongst assets, and the degree to which those assets are designed to distribute a commodity to local end users. The pipeline was to be operated by an unrelated entity under a standard triple-net lease, and was itself “passive and [did] not include any machinery or equipment that produces Product or any commodity.”

Based on the applicant’s representation of these facts, the IRS has held that both the pipes and associated components of the transmission system (compressors, monitoring equipment, and liquid natural gas conversion equipment) are a real estate asset based on interdependence (the system is physically and functionally interdependent), movability (it is not feasible to move all or any substantial part of the system), and passivity (the system was a passive conduit that does not include any machinery or equipment capable of producing the commodity being transported).

Unlike the timber and total energy systems rulings, however, the IRS mirrored the electric transmission system analysis by basing its ruling in part on the fact that the REIT was not operationally involved and would not be the party delivering any product to end users.

There are some additional aspects of this ruling that are almost directly applicable to solar assets. The IRS highlighted that the gas pipeline system connected with an interstate or intrastate transmission pipeline serving a municipality, and that there were numerous “structures, pipes, regulators, and meters as well as monitoring and control devices” at the interconnection point.

With this ruling—combined in particular with the communication tower, timber, and energy

75 PLR 200725015 (Mar. 13, 2007).
76 PLR 200937006 (Mar. 3, 2009).
77 PLR 200937006 (Mar. 3, 2009) (pipelines described as a “system of physically connected and functionally interdependent assets designed for the distribution of Product within a local area.”).
78 PLR 200937006 (Mar. 3, 2009).
system rulings—the IRS has now all-but held that every fundamental inherent and practical feature of solar PV systems qualifies as “real property” under REIT law. As noted, the key area that has yet to be directly treated is a passive system, generating a saleable product, operated by a lessee.

4. Themes throughout REIT Rulings

Solar PV assets bear a fundamental similarities to other industry assets that have been determined to be REIT-eligible, such as communications towers, natural gas pipelines, timber, and electric power transmission systems. All, including solar PV, share crucial common denominators: they possess intended and actual inherent permanence, the REIT remains operationally uninvolved, and the system provides a saleable product to end users. Although the rulings discussed above differ widely in their facts and degree of legal analysis, it is nevertheless possible to discern three common themes.

a. “Real Property” concept has steadily expanded.

One key takeaway from these IRS treatments is that the type of property qualifying for REIT status has steadily expanded. This trend began early: within five years of the initial REIT legislation, the IRS demonstrated an expansionist tendency by remarking that nothing in the legislation “limits real estate assets to these five types of assets.”80 Expansion then occurred case-by-case through applications of the “movability” approach, the Whiteco six-factor test, and most recently via conclusions that commodity-producing timber assets, electric transmission systems, gas pipelines, and total energy systems are all “real property.”81 Also telling is that it

80 GCM 32907. See also GCM 33996 (Dec. 12, 1968).
81 See PLR 200052021 (Dec. 29, 2000), PLR 200725015 (Mar. 13, 2007), PLR 200937006 (Mar. 3, 2009), and PLR 201323016 (July 30, 2012), respectively.
has been not only permissible, but common, for the IRS to analogize to other rulings, and this
treatment is easily available and precedentially-supported for solar REITs.

b. Property Used in Business Activities Conducted by Unrelated
   Entities Remains REIT-qualified.

   A second key theme reflected in REIT rulings is that as long as the REIT is not
operationally involved, it may own business-related assets and lease them to an unrelated person
for the active conduct of their business.\(^{82}\) The requirement that REITs acquire a majority of their
income from passive asset ownership has consistently been based on Congress’s view that
passthrough taxation was appropriate only where the REIT functioned less like a company
engaged in active business operations and more like an investor.\(^{83}\)

   The challenge for the IRS has been to identify the permissible limits of a REIT’s
activities when the REIT owns property capable of being used in an active business. As we saw
in the pipeline and electric transmission systems rulings, it was important to the IRS that the
lessees were unrelated to the REIT, and that the REIT was operationally—and even financially—
passive (as evinced by the triple-net leasing arrangement, among other things).\(^{84}\) In short, so
long as the REIT is not operationally involved or otherwise doing anything that can be construed
as “conducting business,” then REIT-owned assets are allowable in the active conduct of a
business.

c. “Assets accessory to the operation of a business” is a nebulous and
   inconsistently applied standard.

   Lastly, it appears clear that the IRS interpretations do not provide sufficient clarity and
predictability regarding when “inherently permanent” assets are nevertheless excluded from “real

\(^{82}\) GCM 32907.
\(^{84}\) PLR 200725015 (Mar. 13, 2007) and PLR 200937006 (Mar. 3, 2009).
property” because they are “assets accessory.” For the prospective solar REIT focused on solar PV assets, this inconsistency in establishing the “assets accessory” exclusion boundaries is problematic, and impedes a great deal of capital formation. The tenuous and variable applications of the “assets accessory” concept chronicle the IRS’ history of internal debate regarding whether property can be both inherently permanent and “accessory to the operation of a business” and, if so, which characterization controls. One early ruling, for example, concluded that assets could be both inherently permanent and “accessory,” but it did not favor either categorization.85 Yet, ten years later, the IRS concluding that inherent permanence precludes a finding of “asset accessory” and thereby is eligible for “real property” status.86 Standing in stark contrast is an IRS ruling just a few months afterward concluding that “accessory” was dispositive as against inherent permanence.87 To add yet another wrinkle, the communication tower ruling concurrently decided that despite the passive nature of the antennae, waveguides, and storage racks, those assets were “accessory” and not real property.88

This state of affairs—where assets resembling machinery or equipment in any were considered “accessory”—was short lived. Even before the communication tower rulings, the IRS had begun excluding certain types of machinery or equipment from the “assets accessory” exception, such as that related to total energy systems.89 The IRS reasoned that because the total energy system was a structural component of the building to which it was functionally related, the system itself qualified as real property. This suggests that machinery or equipment is not excluded from real property if it is part of a system that qualifies as a structural component of a

85 GCM 32907.
86 GCM 36052 (Oct. 9, 1974).
87 See memorandum to Lawrence B. Gibbs, assistant commissioner (technical), from Richard B. Treanor, chief, Branch No. 4, Interpretative Division (on behalf of Meade Whitaker, chief counsel) (June 20, 1975).
building or inherently permanent structure. This conclusion has been repeated in several more rulings on total energy systems, some as recent as 2012.\textsuperscript{90}

The electric power transmission system and pipeline rulings further reinforce the conclusion that the IRS was continuing to limit “assets accessory” to property considered machinery or equipment used in a manufacturing or production process. Even though the electric transmission system included a variety of equipment, such as inverters and transformers, the IRS nevertheless concluded that the system was “passive and [did] not include any machinery or equipment that creates or generates any [electricity] or any audio, video, electrical signal or other commodity.”\textsuperscript{91} Likewise, the pipeline rulings include descriptions of monitoring and pressure-adjusting equipment, but still concluded that the pipeline itself was not “accessory” because it was a passive conduit without any machinery or equipment capable of producing a commodity.\textsuperscript{92}

To summarize, IRS decisions on whether property is “accessory to the operation of a business,” and the rationale applied, have evolved in inconsistent ways. The IRS first announced that that any machinery or equipment is excluded from the “real property” definition, even if it satisfies the “movability” test and is thereby deemed inherently permanent.\textsuperscript{93} Their position later shifted to include machinery or equipment related to a system that is a structural component of a building or inherently permanent structure in the real property definition.\textsuperscript{94} This broader inclusiveness of what counted as “real property” continued by limiting the “assets accessory” exclusion to only machinery or equipment used in a manufacturing or production process.

\textsuperscript{90} See supra, n.72. Fairly recent rulings holding that central refrigeration systems were real property because they were structural components of an inherently permanent structures (warehouses) support this as well. See PLR 200027034 (Apr. 10, 2000) and PLR 199904019 (Oct. 30, 1998).

\textsuperscript{91} PLR 200725015 (Mar. 13, 2007).

\textsuperscript{92} PLR 200937006 (Mar. 3, 2009).

\textsuperscript{93} GCM 33996 (Dec. 12, 1968).

\textsuperscript{94} Rev. Rul. 73-425 (1973); PLR 199904019 (Oct. 30, 1998); PLR 200027034 (Apr. 10, 2000).
d. “Assets accessory” exclusion should be reconsidered.

In addition to shifting meaning and application, the “assets accessory to the operation of a business” concept is problematic in another way as well. At first blush, the “assets accessory” requirement seems to mesh naturally with the prohibition against a REIT being engaged in the active conduct of a business. However, the distinction between passive and active equipment then becomes moot at best, and unnecessarily obfuscating at worst. If assets meet the Whiteco six-factor inherent permanence test, what should then matter is only whether the REIT is conducting business activities, not whether those assets can be used in a manufacturing or production business. That is to say, if the assets are inherently permanent and the REIT is operationally passive by leasing the property to an unrelated entity, this should pass muster under the tax code without any need to reference the passivity or activity of the equipment. If the purpose of the exclusion is to prevent a REIT from itself directly conducting business activities or producing a commodity for sale, this purpose is more easily accomplished by simply requiring the REIT to lease the assets to an unrelated entity. This would fully preserve all other animating goals, and it would allow REITs to own solar PV assets leased by an entity that could in turn sell the generation under a PPA.

III. Thesis

The fundamental physical, functional, and operational characteristics of photovoltaic (PV) systems satisfy the characteristics of “real property” under REIT law. Thus, “solar REITs” should be allowed to form around the ownership of PV systems, premised on satisfying three inquiries: whether the system possesses the properties of permanence, passivity, and integration (i.e. being integrated as a system). Though the IRS has traditionally conducted very fact-intensive, case-by-case analyses to make these critical determinations, I will also argue that they
should move away from this model and instead standardize PV classifications under the code. This will provide the stability, predictability, and financial incentive needed to effectively form large capital pools, and ultimately spur large-scale solar development.

There are several potential problems for a “solar REIT.” One can be termed that “total income” problem—that is to say, direct PPA income from a REIT-owned solar project might exceed the 15% of total income limit set by REIT law. The second can be called the “movability” problem, where solar PV can be seen as lacking “inherent permanence” and thereby undermining its qualification as “real property” to the extent that the assets are removable without damaging the structure. In many instances these are somewhat easily overcome. The income problem can be avoided by a leasing arrangement in which the REIT is receiving qualified “reents.” The movability problem, in the final analysis, is probably illusory: REITs can simply focus on non-moveable, large-scale ground mount PV arrays and the underlying land asset.

The most problematic aspect of solar PV under REIT law is the “commodity production problem” created by the interrelation between the “passivity” requirement and the “assets accessory to the operation of a business” exclusion. IRS treatments thus far have only allowed systems and components that serve as purely passive conduits for a commodity produced elsewhere to qualify for REIT status. Although there are no direct PLRs or revenue rulings to date, it is widely believed that solar PV assets would fail on these grounds, and instead seem likely to be considered “assets accessory to the operation of a trade or business” and therefore not “real estate assets” within the meaning of Section 856(c)(5)(B). The crux of why solar PV assets fail REIT requirements is usually not movability or integration, but passivity: PV assets

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95 See, e.g., PLR 200725015 (Mar. 13, 2007), noting that “System is clearly distinct from the system that generates [the commodity].”
generate electricity, and therefore are seen as actively involved in the production of a commodity rather than merely serving as a passive conduit. However, as we will discuss shortly, this is both conceptually and scientifically erroroneous: PV is in fact completely passive, solid-state technology, and simply is not anything like the “machinery or equipment” contemplated in the “assets accessory to the operation of a business” exclusion to the real property definition.

The way the tax code is currently written, interpreted, and applied raises key issues for either a “solar REIT” organized around the lease of PV assets or existing REITs that want to invest in solar energy projects without jeopardizing their status. For a REIT to own a renewable energy asset, the asset must be inherently permanent and not be accessory to the operation of a business. In this section, I argue that PV systems possess three necessary characteristics which allow them to be classified as “real property” within the current tax regulatory framework: permanence, passivity, and integration.

A. Permanence—Most solar PV assets should qualify as inherently permanent.

Solar PV projects begin with a thorough siting analysis, and while the various components are mass produced, the system itself is individually tailored to be site-specific in terms of panel angle, whether the array is tracking or stationary, what orientation and placement provides a maximal number of modules and optimizes annual insolation, among other factors. Further, arrays are mounted either on racks bolted to rooftops, or attached to poles driven solidly into the ground or cement pads. So, though many solar assets are capable of being moved, they generally are moved only for maintenance and repair, and often not at all during their useful lives. It is neither easy nor cost-effective to remove and relocate solar PV arrays, in whole or in part. The financing and economic viability of the project relies firmly on a 20-30 year useful life, and contractual arrangements for the sale of electricity for that period.
While a PV installation can be physically moved from one location to another without causing significant damage, the system design, installation, associated contracts, permits, and project economics are all predicated on the asset remaining in a single location for the entirety of its useful life (often exceeding 30 years). Rooftop systems are uniquely integrated into each building or property. System size, panel orientation and tilt, capacity of the inverter, length of wiring runs, and a host of other decisions are made based on the characteristics of the site. PV panels are typically mounted in a manner that allows for replacement or removal, but this is principally for maintenance, and when performed represents a small portion of the full system. In addition, due to concerns of theft, systems are increasingly being designed to make it difficult to extract the panels.

In addition, given the high upfront cost, recouping an investment in a PV system is usually predicated on the long-term revenue streams produced by the asset while incurring only modest costs over that same timeframe. If a business were to move a PV system, either located on a roof or ground-mounted, it would only retain the value of the physical assets. The National Renewable Energy Laboratory (NREL) estimated the cost of hardware for installing a system to be between 50-70% of the total cost of a system.96 The business would also incur the cost of removing the system and either selling the assets (which are worth significantly less due to their inability to receive an investment tax credit or local incentive) or paying the cost of building the system elsewhere. Additionally, while modules have historically comprised the majority of PV system costs, the value of a system’s modules are now just a small fraction and continuing to

decrease dramatically, further reducing any economic viability in removing the system. Thus, the final net value of an installed PV system is considerably less than the cost of the installed hardware, meaning that the practical economics of a PV system effectively establishes both intended and actual permanence.

Many lease agreements and PPAs include provisions outlining solar asset removal options at the end of the term. However, in practice these are rarely exercised, and parties instead typically seek another PPA or buyout the now-depreciated assets. Parties could easily accommodate REIT law via private arrangements by simply amending or even eliminating these contract terms so as to further support a presumption of intent that the assets remain permanently. These scenarios are not dissimilar to the communications tower\textsuperscript{97} and billboard situations—technically the assets could be moved, but for design, financial, and practical reasons they are effectively intended to remain permanently. In short, and virtually indisputably, the entire design, installation, and \textit{raison d'etre} of solar PV clearly centers on \textit{permanence}.

B. Passivity—Solar assets are not “machinery or equipment”

Inherent permanence is not the only requirement for a solar asset to qualify as real property. Even assuming permanence, the asset cannot be “accessory to the operation of a business.” Though IRS rulings have been somewhat inconsistent in interpretation and application of this phrase, one can be reasonably certain that machinery or equipment that creates or generates product is at least as likely as not to be adjudged an “asset accessory,” and thereby excluded from real property under the code. Unfortunately, a solar REIT will be always be forced to confront this hindrance since PV cells produce electricity for sale as part of the

\textsuperscript{97} See GCM 32907 (Sept. 3, 1964).
operation of a business. Thus, though in error due to their physical and operational characteristics, the modules themselves seem likely to be considered “assets accessory.”

IRS rulings show that if an asset is passive in nature and is neither easily moved nor intended to be moved (inherently permanent), then it should be considered “real property” and not an “asset accessory.” Passivity is such a critical determination because it distinguishes the asset from “equipment or machinery,” 98 Solar PV systems exhibit three fundamental touchstones of passivity: they consist of solid-state physics, they are functionally and operationally static, and they are systemically integrated.

Traditional energy-producing assets—such coal, gas, and nuclear plants—have not been viewed as real property under the tax code due to the active nature of their generation processes. The variety of moving parts needed to produce electricity, such as turbines and generators, serve to exclude traditional energy assets from REIT qualification. Even wind turbines, hydro-power, and concentrating solar systems must convert mechanical energy wind or water into electric energy. PV modules, however, are solid-state: there is no mechanical energy component to their generation, and no moving parts. Rather, PV cells convert solar radiation directly into electrical energy, effectively converting energy, but never really “making” it. Perhaps these are distinctions without a difference, but REIT jurisprudence seems to have hung its analytical hat largely on this very peg, thereby making these passive characteristics of solar PV central to the legal analysis.

C. **Systemic Integration**

98 The exception to this is a machine that is a structural component of a building. “In the case, however, of a building or inherently permanent structure that includes property in the nature of machinery as a structural component, the property in the nature of machinery is real property.” 26 C.F.R. 1.263A-8(c)(4). The term “structural component” of a building is not defined, however, can be interpreted to be a fundamental portion of a structure that is embedded and not easily removed, such as a roof or a window. While most traditional PV assets would not be characterized in this way, this too is changing and an increasing number of advanced PV technologies are now being incorporated into windows, facades, or roofs, all structural components of buildings.
Two important characteristics emerge from solar PV assets being integrated as a system. First, integration contributes to the “passivity” element: the more integrated the system, the less movement is involved in the intended normal functioning on which the project is premised. Second, more importantly, “integration” also speaks to whether the entirety of the assets should receive identical legal treatment. A module, for example, is nothing more than housing which holds a number of PV cells together in one place, with circuit wiring to direct the photoelectric effect. None of these components works or effectuates any intended purpose without the others. Multiple modules form large arrays through mounting on racks or poles, but even the modules and mountings are integrated because module performance significantly deteriorates without proper mounting. Inverters are another component that may seem separable, but the entire system is essentially worthless if the direct current from the array cannot be received as alternating current by the transmission grid. In short, solar PV functions only with all of these components functioning together, not as moving parts but as a holistic system that should be treated in a legally uniform way.

D. Section Summary

Well-established bodies of REIT jurisprudence strongly suggest that categorizing PV assets owned by a solar REIT as “assets accessory” is neither the necessary nor correct outcome. Solar project assets typically include panels containing posts, metal racks, PV cell modules, wiring, inverters, and interests in real property, to name but a few. Leasehold or fee interests, and probably anything permanently affixed to the ground such that it is very difficult to move and is intended to remain (e.g. ground mount posts and cement pads), are almost certainly real estate assets under the communication tower, railroad, and nearly all other rulings.
All of these components are intended to be functionally and operationally integrated with the real estate assets on a permanent basis, but are forming a system (albeit a passive, solid state one) that is specifically designed to generate a commodity for sale to an end user in the active conduct of business. Thus, though these components currently occupy a more tenuous status under the current tax code, they should pass muster.

The legal analyses of timber allow for assets producing a saleable commodity to pass muster under Section 856—\footnote{See PLR 200052021 (Dec. 29, 2000).} it is difficult to see on what point one would distinguish the generation of electrons from inherently permanent PV arrays wholly operated by a lessee. Furthermore, the pipeline rulings\footnote{PLR 200937006 (Mar. 3, 2009).} establish that gas pipelines and associated components, as passive conduits for a commodity, are both real estate assets. Under these rulings, then, the proper outcome for the other necessary parts of the PV system, such as the wiring and inverters, is probably real property rather than “assets accessory.” The focus in these analyses is the extent of inherently permanence \(\text{(movability)}\) the degree of functional \textit{interdependence} among assets, how operationally involved the REIT is, and whether the system includes any machinery or equipment that produces the commodity \(\text{(passivity)}\).\footnote{PLR 200937006 (Mar. 3, 2009) (pipelines described as a “system of physically connected and functionally interdependent assets designed for the distribution of Product within a local area.”).}

Similarly, we see in the electric power transmission system ruling\footnote{See PLR 200725015 (Mar. 13, 2007).} the distinction between the \textit{passive} components of a system and the \textit{active machinery} that generates the electricity conducted through the system. Like the pipeline rulings, \textit{physically connected and functionally interdependent} assets that \textit{passively} conduct energy through to end users are considered \textit{inherently permanent} and therefore a qualifying real estate asset.
These rulings have enormous significance for the formation of solar REITs: combined, they hold that every fundamental inherent and practical feature of solar PV systems, and REIT ownership of those systems under a triple-net lease, qualifies as “real property” and otherwise passes legal scrutiny under REIT law.

At the same time, though, they also present a powerful analytical conundrum. How does one treat assets that do not include any active machinery or equipment, but are comprised of passive elements that themselves do generate electricity without anything the IRS has traditionally considered “machinery or equipment”? Solar PV is sui generis in this regard: the passive conduit includes and is co-extensive with the generation source—they are, scientifically and practically, one and the same.

IV. Summary & Conclusion

REITs continue to be a proven, effective financing vehicle for capital-intensive projects due to their tax, risk-spreading, and liquidity benefits. Though solar PV assets have appeared to be ineligible for REIT qualification, REIT jurisprudence has involved a steady expansion of the “real property” concept to the point where such a move is now possible. Billboard, pipeline, electric power system, timber, and various other IRS rulings hold that “real property” requires the very same inherent permanence, passivity, and integration characteristics central to solar PV assets.

Because the fundamental physical, functional, and operational characteristics of solar PV systems satisfy the characteristics of “real property” under REIT law, “solar REITs” should be allowed to form around the ownership of these systems. This would provide the stability, predictability, and financial incentive needed to effectively form the large capital pools needed
for large-scale development projects, and hasten the transition to a more sustainable energy and economic future.